

# THE TECHNOLOGY REVIEW

RELATING TO THE MASSACHUSETTS INSTITUTE  
OF TECHNOLOGY



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ALUMNI ASSOCIATION

# technology review

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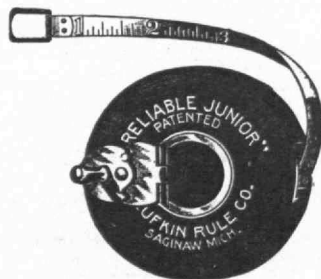
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Chicago—Northwestern Association of M. I. T. at Grand Pacific Hotel, Thursdays at 12.30 p. m.

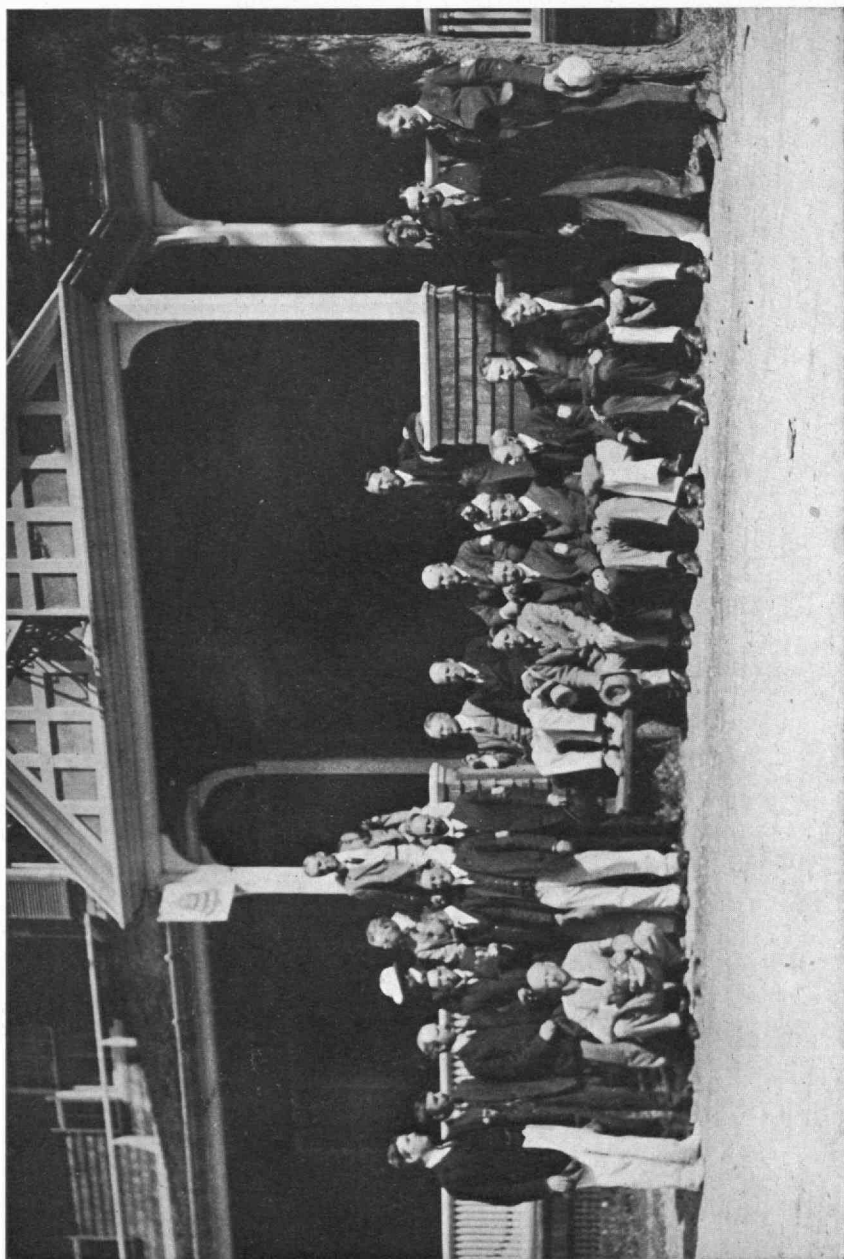
Cincinnati—Cincinnati M. I. T. Club in the Main Dining Room, at the Bismarck, Mercantile Library Bldg., Walnut Street, Tuesdays from 12.30 to 2.00 p. m.

Los Angeles—Technology Club of Southern California, at the University, on the first Wednesday of each month.

San Francisco—TECHNOLOGY ASSOCIATION OF NORTHERN CALIFORNIA, at Jules Café, Tuesdays.

Seattle—Technology Club of Puget Sound, at the College Club, third Tuesday of each month.





QUARTER-CENTENNIAL CELEBRATION OF THE CLASS OF '88 AT WIANNO, JUNE 6-9, 1913

# The Technology Review

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JULY, 1913

No. 7

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## NEW COURSE IN INDUSTRIAL PHYSICS

---

Founded to Meet the Demand for Teachers and Investigators  
of Physical Problems and to Promote Research

President Maclaurin announces the establishment of a course that will be unique in educational institutions, one in industrial physics. This is the outcome of the need for men trained in physics for the solution of problems that present themselves to the industrial world. It is but a short time since President Theodore N. Vail of the American Telephone and Telegraph Company, in a conference with President Maclaurin, spoke of the new condition of affairs, in which in his opinion business firms will find it to their advantage to invest in work of research even when the outcome of the work is not precisely in the line of the processes of their own manufactures. For such work there will be needed laboratories and technically trained men and the institutions that have laboratories already will enlarge them and add to their force of research men. Laboratories of this kind have been maintained by the Institute within the possibilities of its funds.

When one speaks of a research laboratory, the suggestion is at once the chemical laboratory, for these have become familiar to the manufacturer, and there is today hardly any large corporation whose products are related to chemistry, which does not, within its own establishment or else at some convenient educational institution, have the advantage of laboratory investigations. Such institutions as the du Pont Powder Company spend large sums of money—\$300,000 annually being one known expenditure on this account—for what is termed chemical research. Next in point of familiarity is the electrical research laboratory. The

marvelous development of electrical appliances has been due to intensive investigation in such places, and the great manufacturing firms have important laboratories, such as that of the General Electric at Schenectady.

When one looks over the chemical problems that are to be considered, one is surprised to find how large a portion of them are really in the field of physics; and, with this in mind, the philosophy of establishing courses in which the technical student shall have his attention especially directed to the possibilities of research in physics is at once patent.

As in many other lines of technological education, the Institute was the pioneer school to establish a course in physics. The time was ripe for such a course and in 1873, acting on the initiative of Professor Edward C. Pickering, then Thayer professor of physics at Technology, it was established. The course in natural history, now developed into biology and public health, was started at the same time, the two being the first additions to the original six courses with which the School of Industrial Science of the M. I. T. opened. At that time no course leading to a degree in physics was offered in this country and there was little opportunity for a student to pursue studies in this and allied branches of science. The instruction then given in the various colleges was almost entirely confined to elementary lectures designed for all undergraduate students alike.

At this time there was laid out a full course in physics equal in extent and thoroughness to the courses leading to the engineering or other professions. From the date of its establishment the requirements for graduates have been severe, especially because of the necessarily large amount of chemical and mathematical studies which are included, requiring a rather extended range of ability on the part of the student.

The purpose of the course is to prepare students for the profession of scientific teaching and likewise to train competent men to become investigators of physical problems either in pure physics or in its industrial applications. It has given also an excellent preparation for those intending to enter upon the work of scientific or technical investigation in industrial establishments.

The introduction of special courses, more or less separated from that of physics, has been undertaken when it became apparent that there was a place for the students of such a course, and for

this reason the Institute established in 1882 its department of electrical engineering, well ahead of any other school. The good example was very quickly followed by other colleges.

Again in 1901 the department of physics, anticipating the opportunity and demand for men specially trained along the combined lines of physics, electrical engineering and electro-chemistry, was a pioneer in establishing the first course in this country leading to a degree in electro-chemistry.

The newly introduced course in industrial physics is intended to meet the increasing need in various branches of industry for men who have received a training which will particularly fit them to deal with problems whose solution involves a thorough knowledge of physical instruments and processes and of the physical properties of materials. Many industrial corporations are coming to recognize in their business the value of such expert training in physics, and there can be no reasonable doubt that in the near future this demand will increase as scientific methods come to be more fully applied to the industries.

The suggested option differs from those hitherto constituting the course in physics (Course 8) in requiring a less extended study of pure and applied mathematics and a fuller consideration of applied physics, both in the lecture room and laboratory. The study of applied optics, heat measurements and electrical measurements is greatly extended. Much time is devoted to theoretical and applied chemistry. A very considerable amount of study in mechanical and electrical engineering subjects is required and electro-chemistry, pure and applied, and metallography are likewise included. There is provided an exceptional equipment of instruments and apparatus of precision, so that a large amount of accurate work can be done in the above lines of study.

The course as laid out is such that one completing it should possess a knowledge of physical investigation and methods of dealing with physical problems that will enable him to work intelligently with questions of this character as they may arise in connection with processes in the arts.

When once the suggestion of physics applied to manufacturing and to the problems of life is considered one is astonished to note how constant are the relationships between those departments of science and every-day problems. The smoke nuisance, for example, is largely a matter of physics, whether in the production

of better combustion at the furnace grate, or, failing here, in the capture of the floating particles of carbon by electrical discharges as is done in recent devices, an application of a principle that is a generation old but which has waited for a physicist of today to put it into practical operation. There is a very large group of matters that pertain to lighting and ventilation which are of great practical importance. The demand for a means of illuminating basements or out-of-the-way rooms has been constant since the late Edward Atkinson in 1897 tried the effect of ribbed glass. The lighting of the new Art Museum was a problem in physics and Technology experts were at work upon it for a year. Here an experimental building was constructed at the place, the illuminated areas under different conditions of lighting were marked, it was fitted with artistic furnishings and decorations and pictures and statues moved into it. In this way by the aid of physics the experiment of lighting became a certainty. Acoustics is likewise a problem of physics, developed to a considerable extent in the hands of experts, but wofully unfortunate when attempted without experience or technical expertness.

The photographic camera is so familiar a toy, and the commercial aspect of photography so prominent, that the value of the camera as a scientific instrument is commonly overlooked. Yet a working knowledge of photography is essential to the physicist. The photographic plate is not merely a page upon which certain effects may be conveniently recorded; it is often the instrument of discoveries of immense importance. For example, the X-rays were detected first by their photographic action; and the recent astonishing extension of our knowledge of the atom has come about as a result of the original investigations of Becquerel on the photographic effect of emanations from certain substances.

In the search for new illuminants, the study of the spectrum is of great importance, and most of this study is best done by photography. The investigation of alloys requires the microscope, and here photography has long been indispensable. The study of motion in detail is possible only with the aid of photography, and the kinoscope has undeveloped scientific possibilities quite apart from its well-known power as an entertainer, and is destined to be of great value. These few illustrations will make it clear why photography has a place in the new Institute course, both in the classroom and the laboratory. In the classroom general

principles and processes are discussed; in the laboratory photographic theories are tested, and the photographic plate is studied, both as a means and an end, the student acquiring in this way a knowledge both of the possibilities and the limitations of the photographic process.

In probably no kind of business is there as much activity today as in that of material to insulate against heat or cold. There are at the moment under consideration and experiment at Technology many new kinds of heat-insulating substances. These may be intended for the low degrees of cold, the ordinary temperatures of out-of-doors or the super-heat of the electrical furnace. The Institute has already been doing this work; it has had special courses on refrigeration, and nowhere in this country is there such an equipment for experiment along these important lines.

The position of architects and builders in certain matters in regard to physical problems has changed radically within the memory of the present generation. A quarter of a century ago the builder said to the owner, "Shall we use a pipe-covering?" Today the use is a foregone conclusion and the question that is asked is plainly as to the insulating value of this, that or the other material. With a large steam plant, the percentage of saving of an efficient cover for pipes is an important factor, while to the owner of an electric furnace, where the leakage of heat is indeed costly, the pains taken to secure the best material to stop the leak are noteworthy. The determination of the comparative value of insulator A against B is purely and simply a question in industrial physics.

Quite as important in the commercial world is refrigeration and here, again, heat insulation is an important factor. Everybody has his eyes open to find some new material that will supplant the old. Wastes of all kinds are tried and the number of new things of the kind produced is more than a score a year. The comparative values of these must be tested out.

Then, in refrigeration, there is the problem of construction, of the maintenance of constant temperature and humidity and many other items that are not apparent at first sight. It is, indeed, a problem as to what materials can be used for walls. If one will concentrate his blowing power against a block of stone, he will find that with some sand stones he may deflect a candle flame through a block a foot or more thick. Into such interstices the air with its moisture is sure to penetrate, and when at night the heat

of day is withdrawn, freezing is sure to follow. The questions are like these: What material, what thickness of wall, where does concrete come in, what better material may there be; all these materials, of course, relating themselves to cost. The problem of the construction of a hotel such as it is proposed to build on Mount Washington is by no means solved, and engineers discuss seriously among themselves as to the behavior of any material with the exception of wood.

There is another set of problems, likewise in physics, in the construction of other buildings than these special ones. What can be done in the way of fire protection? Steel is the material to be used in construction, how is it to be protected, and protected against various dangers, against fire, against the elements?

There is a great range of problems with reference to the melting and boiling points of chemical substances. What can be done with fire-clay from a newly found bed? Is it suitable for this or that use? Is a new one more advantageous? Then in the glazed wares, questions are always coming up of temperatures, behavior and coefficients of expansion. From the breaking off of piano keys of an artificial ivory, because the material does not expand and contract with its wooden base, to the intentional crackle of a glaze, there are always a range of problems in physics.

There is the very practical matter of the heat of fuels. Formerly a ton of coal was a ton of coal, whether it was coal or half slate. Here, and very largely through Institute work, the aspect of the matter has changed. When the City Hospital or the Health Department buys a hundred tons of coal it buys a specified quality, as indicated by heat unit tests. The City Hospital has its own testing laboratory for the purpose, and is setting an example to other large consumers of fuel. Industrial physics, therefore, has revolutionized the method of purchasing coal.

When it comes to fire-resisting materials there is likewise a large field. It is interesting here to realize that one such form of material, an asbestos wood, was developed in the laboratories in the Walker Building at Technology, and now means an industry producing millions of square feet a year. Properties of alloys is another wide field. In the enormous industries that have centred about the manufacture of automobiles this is one matter of exceeding importance. There are in common use at least fifteen different kinds of steel, vanadium, tungsten, nickel and rarer metals being em-



ployed in their making. Each kind is for some restricted use, and manufacturers are now required to guarantee the alloy to within one-tenth of one per cent. in its composition. Strange as it may seem, a very minute difference in the proportions used may result in an abrupt change in the qualities. The knowledge of what a constituent in a given ratio will carry in the way of qualities is very important, yet outside of a small range of alloys employed, the field has been practically unexplored. A commercial laboratory in one experiment made a couple of hundred alloys that were new and tested out of these the few that were suitable to their needs, but in doing so testified to the great need of a systematic research which should establish the properties and probable conduct of all reasonable mixtures of metals. Here industrial physics merges into industrial chemistry, there being no definite borderline.

Physicists all know the old story of the knife maker who standardized his product by using one of the earliest pyrometers and was able to out-do all his competitors because he had the means of turning out a uniform product. Standardizing steel is an important work.

The various forms of electric furnace and the enormously high temperatures which they develop have opened up wide fields of research and led already to the production of valuable substances hitherto unknown or produced by ordinary chemical means only at a prohibitory cost.

Sound-proofing has been and always will be an important matter so long as this is to be a congested and noisy world and a higher perfection in this art would be a great boon to dwellers in apartment houses.

The new course is likely to offer excellent opportunities in the commercial and industrial world to those who have received its training. It is, however, no course for a mediocre man, for it needs ability and, above all, initiative. The man, who is to be successful in ferreting out the puzzles of industrial physics, cannot be one who waits to be led, but must himself be one who can push.

When it comes to the question of what are the fields open to a graduate of such a course, there need be mentioned for the illustration only such institutions as the Bureau of Standards at Washington and the laboratories of such corporations as the General Electric Company, National Carbon Company, National Lamp

Association, the Westinghouse Company, the Western Electric Company and the laboratory of the du Ponts.

These are large institutions that exist now and which have trained their own men selected from those having already a technical education. They are ready today to make demands on the Institute and schools giving equivalent training for men prepared to take up their problems, just as the great electrical and engineering plants demand men specially educated for their work. The time is at hand when the laboratories will demand physicists as they have chemists, or else ask for chemists physically trained.

Students taking the course in industrial physics must take the whole course. This will ensure to them a well-related and fully rounded education, the details of which will be developed in the coming three years. There is in this country today no such course, and it is hardly necessary to say that nothing in Europe is comparable, since the schools do not give courses in a similar way. There the man studies the subjects about as he likes and where he likes. At the Institute there is the instructing staff competent and ready to take up the new lines of instruction, there is a physical, an engineering and a chemical department on a splendid basis, the equipment is almost unexampled and when the older devices are found insufficient the school is ready as in the past to add what may be necessary. It is the best four-years' course of training that the Faculty of the Institute has been able to devise for the purpose, one philosophically developed to meet the great present industrial need of the country and one that is fully up to the standards of these ever-advancing times.

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Two hundred and ninety degrees were conferred by the Institute of Technology at the Commencement exercises, June 10. One student received the degree of Ph.D.; two received the degree of M.S. and two hundred sixty-eight, the degrees of B.S.

# ENGINEERING AND BUSINESS ADMINISTRATION

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Alumni Committee recommends that such a course be established and suggests a general outline

The committee appointed by the Alumni Council to consider the advisability of establishing at the Massachusetts Institute of Technology a course in "Business Engineering" presents herewith its final report.

In studying the question submitted to it, your committee has proceeded along the following lines, viz:

1. *Preliminary Survey.* An effort was first made to ascertain what has already been done at American institutions of collegiate standing in the way of instruction in business administration, commerce, finance and kindred subjects.

2. *Plans for Introducing Business Studies.* Your committee next endeavored to determine in what manner business subjects could best be introduced into the Institute's field of instruction without decreasing the effectiveness of the courses already established.

3. *Character of the Proposed Course.* This study having clearly shown the need of a separate course at the Institute in which both engineering and business should be emphasized, your committee considered in detail the character of the proposed course and drew up a tentative outline of its curriculum.

4. *Relationship to other Courses.* Your committee has considered the relationship of the proposed course to the other courses of the Institute and the effect of its establishment on the entire student body.

5. *Instructing Staff.* We have also discussed what additions to the present Instructing Staff of the Institute might be necessary in order to introduce the proposed course.

6. *Cost.* Likewise the question of the immediate additional cost of establishing the proposed course has been considered and the best method of financing the increased expenditure.

7. *Title.* Your committee has considered the question of a proper title for the proposed course.

8. *Demand for Courses.* In order to ascertain whether there is a real need for a course of the general character proposed, your committee consulted both personally and by correspondence about fifty prominent Institute men and others, including several well-known educators, all of whom were asked to comment on the general idea and on the detailed schedule submitted.

9. *General Considerations.* The committee has also considered certain arguments which have been brought forward against the proposed course.

#### PRELIMINARY SURVEY

As a first step in its investigation, your committee made an effort to ascertain what had already been done at American institutions of collegiate standing in the way of instruction in business administration, commerce, finance and kindred subjects. The results of this investigation are tabulated on a separate sheet, "Exhibit A", which may be here summarized:

Four institutions give post-graduate courses of the general character under consideration, namely:

	NO. OF STUDENTS
Dartmouth College.....	50
Harvard University.....	96
Northwestern University.....	447
University of Pennsylvania.....	535

Ten institutions give similar undergraduate courses, namely:

University of California.....	258
Carnegie Institute of Technology .....	54
University of Chicago.....	190
University of Cincinnati.....	95
University of Illinois.....	190
Lehigh University.....	—
University of Michigan.....	105
University of Minnesota.....	300
New York University.....	616
University of Wisconsin.....	308

Three institutions conduct or have planned evening courses of a similar nature, namely:

New York University.....	616
Northwestern University.....	447
Boston University.....	Not yet operating

Our examination of the curriculums of these courses leads to the belief that the courses at Harvard University, Dartmouth College, University of Pennsylvania, and the Carnegie Institute of Technology, most nearly meet the requirements of the Massachusetts Institute of Technology. The courses at several of the other institutions are largely devoted to accounting, and as such are little better than those given at the so-called "commercial colleges," whose principal province is to train clerks and amanuenses. In only one is emphasis laid on science and engineering. The Carnegie Institute of Technology alone aims to combine business and engineering studies, its course being, in the language of one distinguished educator, "The latest invention along this line."

As officially described in the Carnegie catalogue, the course in commercial engineering "is designed to afford a student such a combination of technical and commercial training as will prepare him especially for the commercial side of engineering work. The curriculum divides naturally into two parts, one consisting of the technical courses, the other of the commercial courses. The commercial work is identical for all students who enter the commercial engineering department. It has been planned with two objects in view, to give the student such information and such practice as will increase his value to his employer in the subordinate positions in which he will naturally find his first employment, and at the same time to prepare him for more rapid promotion than he could otherwise expect, and for greater efficiency in the higher positions to which he may attain.

"The technical schedule is arranged under two divisions. In one are included all the subjects the study of which may be regarded as necessary parts of a sound preparation for any branch of the engineering profession. These courses are prescribed for all students electing commercial engineering. In the second division are included five groups of optional courses, one in each of the technical departments of chemical, civil, electrical, mechanical and metallurgical engineering. These courses will afford a student special training in the particular branch of engineering in which he expects to find his future employment. He takes all the courses scheduled in the particular option which he chooses.

"A special feature of the course in commercial engineering is the attention given to the study of scientific methods of management and production, and also to design for economic production.

Through the courtesy of certain manufacturing interests, students are permitted to make systematic use of several up-to-date engineering shops, for critically studying in each case the plant itself, its organization, its method of management, and its processes of production in detail.

"With the exception of one sophomore course under the electrical option, all the optional work is scheduled for the junior and senior years."

In response to an inquiry, Dr. A. A. Hammerschlag, president of the Carnegie Institute of Technology, states that the course in commercial engineering was established to meet the persistent demand on the part of the larger industries of that district for graduates who have completed a curriculum in accordance with their outline. The second reason for offering this course is found in the belief that many technical students are better adapted to the business side rather than to the strictly technical side of engineering. The course was established only two or three years ago, consequently no students have been graduated from it as yet. The present registration shows that 54 men are enrolled out of a total of 748 attending the School of Applied Science of which this course is a part.

#### PLANS FOR INTRODUCING BUSINESS STUDIES.

Various suggestions have been made from time to time in the past as to the best method of introducing business subjects into the Institute's field of instruction. Some fifteen years ago Mr. J. P. Monroe suggested that there be established at the Institute a "course in commerce"; and at a later date, Dr. Dewey outlined somewhat in detail his ideas of what such a course might be. This outline provided for four years of undergraduate study in science, general studies and economic subjects, the last being so arranged that the student could specialize in any one of four different options, namely: banking, export trade, manufacturing, and transportation. While recognizing that a course of this kind possesses much merit, your committee feels that as engineering is practically eliminated from its curriculum, it does not fulfill the requirements of an education in business engineering, and consequently falls outside the scope of the present inquiry.

A second suggestion is that Course IX be reestablished practically along its original lines. Prof. Arlo Bates, in an article appear-

ing in the April issue of the TECHNOLOGY REVIEW, has presented this argument in a manner at once able and convincing. Many of the former students of Course IX have also recommended that that course be reestablished, but in a materially modified form. The new course, they believe, should, like the old one, be based primarily on a study of the natural sciences and should include strong courses in English, history and two modern languages, but they think that more emphasis should be laid on economic subjects. Your committee also believes that the establishment of a course of this general character is desirable, especially if its studies were differentiated by options so as to enable the student to specialize in foreign commerce, finance, political science and possibly in sociology, for it would serve to meet the demands of a distant class of students who are unfitted for, or undesirous of taking engineering courses. It is recognized, however, that this would not be a course in business and engineering, but a course in business and science as distinct from engineering; and as such does not fall strictly within the scope of this committee's inquiry. Attention may, however, be called to the fact that if the course in business and engineering recommended below were established, there would be scarcely any added expense in maintaining a course like that here suggested.

A third suggestion is that the business studies be offered *only* in a post-graduate course open to the graduates of any of the present engineering courses. Your committee considers that this plan is not in harmony with the traditions and educational system of the Institute. The Institute is primarily an undergraduate school. All of its courses at present can be completed in four years; and, in view of this fact, a five-year course would be likely to attract very few students. Moreover, the Institute's traditional method of instruction is to coördinate, through the course, the vocational studies with the general and fundamental ones, rather than to pursue the professional work exclusively in the later years; and any divergence from this method would be at variance with historic precedent and present practice. If the instruction in business principles is to be made effective and practical, it must, therefore, under the Institute's conditions be offered to its undergraduate students. This does not, of course, prevent the business studies from being pursued also by graduate students in a fifth year; and since about one year is required for the com-



pletion of the studies of this kind included in the new undergraduate course described below, it is probable that those of our engineering graduates who can afford to spend a fifth year at the Institute will come back in considerable numbers for this purpose.

It has also been suggested that the present courses of the Institute be revised by eliminating the more advanced engineering studies and substituting for them studies in business. This suggestion has received no favor from this committee, which believes that the present engineering courses at the Institute should not be substantially changed. The Institute has achieved its present high standing largely through the thoroughness of its instruction along purely engineering lines, and nothing should be done which might tend to alter in any marked degree the character of this training. A degree from the Institute in civil, mechanical, mining, electrical, or chemical engineering should imply just as thorough an engineering training in the future as it has in the past. It might prove possible to introduce into these courses a limited amount of business instruction by eliminating certain specialized studies; but such studies are few in number and the amount of time that could be secured without serious detriment to the engineering training would be small and quite inadequate for a satisfactory business course.

The plan which your committee has adopted provides that a *new undergraduate* course shall be established whose aim shall be to furnish a broad foundation for ultimate administrative positions in commerce and industry by combining with a general engineering training instruction in business methods, business economics and business law. This new course would in no way replace courses already established, but would be supplementary to them. It would provide training for those men who desire to associate themselves with the administrative end of industrial establishments as distinct from the engineering end, and for those men who wish a broad education along engineering and economic lines. It would in no way conflict with the establishment of a revised Course IX which your committee believes to be also desirable.

#### CHARACTER OF COURSE

Having determined to recommend the establishment at the Institute of a separate course in which engineering and business are both emphasized, your committee next considered in detail

the structure of the proposed course and drew up a tentative outline of its curriculum. In approaching this work your committee fully realized that its members were not qualified to prepare a schedule which was likely to meet the requirements of educational experts in this line. Such work should naturally be undertaken by men who by training and experience are best able to solve the many intricate questions connected with a problem of this kind. On the other hand, it was thought that without such a schedule, much difficulty would be experienced in indicating the exact character of the course proposed. Therefore, with such assistance as it was able to secure, your committee, proceeding with due modesty, drew up the attached schedule which is submitted for your consideration. This schedule provides for an undergraduate course based primarily upon the Institute's mode of instruction, that is, it is cultural but at the same time vocational in character. In this course the student is required to pursue simultaneously during four years, studies in the so-called humanistic subjects in science, and in engineering, and, during the last three years, in the broad principles underlying business procedure. In the proposed course the aim would be: first, to require all students to pursue thorough courses in the sciences of chemistry, physics and mathematics as being fundamental to such an education as is proposed; second, to strengthen the course in English, it being believed that a thorough knowledge of one's own language is a primary requisite in any education of a broad character; third, to require all students of the course to devote a large proportion of their time to purely engineering subjects, but to permit them to specialize along the three main lines of mechanical, chemical and civil engineering, which may, of course, be expanded later to include electrical engineering, mining, etc.; and fourth, to require all students of the course to devote about 25 per cent. of their time to the study of economic subjects, these being chosen with the idea that they would not only be cultural in effect and useful for the specific knowledge they would supply, but also with the view of training the mind to meet industrial problems in an analytical manner, backed by a broad view-point.

The Institute's historic method of instruction of "learning by doing" should be followed through the course. In detail the schedule as outlined, (Exhibit "B") provides for a course of 5915 hours of study prescribed during four years for the recipient of a

degree. Of this number, 945 hours, or 16 per cent. of the whole, is devoted to general studies (English, history, languages, etc.,) 3470 hours, or 59 per cent. to science and engineering, of which 885 hours, or 15 per cent. of the whole, is applied, at the option of the student, along either mechanical, chemical or civil engineering lines, the remaining 25 per cent. being devoted to business studies. Under this schedule the time given to English composition and literature is 60 per cent. greater than in the present courses of mechanical, chemical and civil engineering. French and Spanish are made optional with German as a language study except in the chemical division, where German is prescribed. The engineering studies scheduled are equivalent to those now being given to the students of chemical engineering, which, as is well known, is one of the most successful and popular of the courses now established at the Institute. The specialized engineering studies given under the three stated options are those which are fundamental to their respective professions—the student being expected to acquire in a fifth year, or by outside experience, such finishing touches as he may require. The economic subjects demand more detailed explanation. They are scheduled to begin in the first term of the second year with a single course in political economy and are gradually increased until in the fourth year the time is devoted almost exclusively to specialized engineering and economic subjects.

As has been said, the courses in political economy, economic history and economic geography being fundamental to all that follow, are taken during the second year. These courses are intended not only to include a study of the science of wealth in its broad aspect, but also to give a general survey of industrial conditions.

With the beginning of the second term of the second year the study of accounting is undertaken, continuing through the whole of the third year and embracing within its scope the general subject of statistics. Your committee believes that this course in accounting should be patterned somewhat after that now established at the Tuck School of Administration and Finance at Dartmouth College in which lectures are supplemented by numerous problems in the application and definite expression of principle.

The title "commercial organization" signifies a course similar to that given at the Harvard Graduate School of Business Administration. This course aims, "to ground the student in the princi-

ples underlying the business of today as they are illustrated by concrete examples offered by an examination of typical American industries. . . . Throughout the course the instruction is based on specific cases, and the effort is to help the student develop two things, first, a sense of perspective in industrial and commercial affairs, and second, an adequate method of approach to the problems of present-day business."

The course in industrial organization might also be modeled after that of the Harvard Graduate School.

In this course "a study is made of the principles underlying the modern organization of business and of the recent applications of system. A brief introduction outlines the present tendencies of industrial organization and indicates its forms and problems. This leads up to a study of the modern factory and of factory methods of production. The considerations determining the location of the factory and the type of factory building and equipment are examined, but especial attention is given to questions of internal organization. The various problems involved in the economic management of the departments of the factory are treated at length, and emphasis is laid upon methods and results in the efficient organization of labor and in just relations between employer and employed. A series of concretely presented illustrations of modern practice in factory management accompanies and follows the exposition of the subject. Lectures, assigned reading, study of typical forms and systems, and class-room discussion constitute the method of instruction. The members of the class are required to inspect well organized factories and business establishments and to prepare written reports thereon."

The purpose of the subject entitled industrial psychology is to make the student appreciate the personal element in industrial life. Since the graduates of the new course are to have dealings with *men* rather than *things*, a knowledge of certain practical sides of psychology could hardly fail to be of great value. Thus it is generally recognized that the art of advertising and salesmanship is largely a psychological question; also that the efficiency of labor is largely dependent on the assignment of individuals to the work for which their mental characteristics fit them. The important topic of business ethics would also naturally be discussed in connection with this subject.

**BUSINESS LAW**—In the general scheme, ninety hours instruction in each half of the fourth year are allotted to business law, in all, 180 hours. The example furnished by the Harvard School of Business Administration indicates that the essential general topics of a course in business law are commercial contracts, business associations, and banking operations. Two thirds of the allotted time might be devoted to these three subjects, the remainder being given to other legal topics. Of these the following seem most important: restraints upon liberty of contract, imposed by common law and statute; employers' liability for injuries received by employees; the law of patents; the law of trade marks and unfair competition.

The case system of instruction in law is so universally in operation that any argument in its support is superfluous. Involving, as it does, the method of reasoning from specific instances to general principles, the case system is in harmony with the laboratory system with which students in engineering are made familiar. In a brief course such as is here proposed for engineering students, precept and exposition by the instructor may of necessity be made a larger feature of the course than it does in the law schools; nevertheless, it is believed that the case system should be the basis for the proposed courses of instruction in law, and that as large a scope as possible should be given to the students to reach conclusions from particular cases by their own reasoning. One of the greatest advantages to be derived from such a course in law should be the new and valuable kind of mental training which it would afford to an engineering student; and this training should not be sacrificed by presenting the subject in a course of lectures of a purely informational character.

This brief course in business law should give the student such a knowledge of law and legal methods and such a point of view as will lead him to consult counsel whenever his business operations depart from tried routine. It should make him aware that any new developments should be submitted in advance to trained lawyers, whose precautionary advice before the fact is likely to prove more valuable and less expensive than their services when resorted to in a fully developed emergency.

ARGUMENTATION AND REPORTS—The purpose of this subject, tabulated under general studies, is to train the student in the preparation of clear, concise, logical statements and reports. The importance of ability in this direction and the need of a fuller development of it by proper training in our colleges and scientific schools is so generally recognized as to need no discussion.

The course in banking and finance might well be similar to that already given by Professor Dewey at the Institute as an elective subject.

"In this course the following topics are considered: national banks, state banks, trust companies, savings banks, different kinds of loans, securities for loans, the bank statement, the money market, relation of the treasury and crop movement to money market, clearing house, domestic and foreign exchange and foreign systems of banking, particularly those of Canada, England and Germany. A part of the time is devoted to individual investigation and the use of banking reports under the immediate supervision of the instructor."

The course in taxation and insurance would consist of a series of lectures describing the systems of taxation and insurance in the United States and the principle countries of the world, with special reference to their application to American industries.

The aim of the course in transportation is to give a broad survey of the organization and business of railroads and their relationship to the public in the interests of the shipper. It is questionable how much time should be given to this subject, but your committee believes that it should not be overlooked.

The course in foreign trade is modeled after that at the Carnegie Institute of Technology. This course deals broadly with the export trade in manufactures, considers the geography of foreign trade centers and discusses, by means of lectures, the methods of acquiring and maintaining foreign connections, of factors determining the choice and extent of market and export methods to be used, of price variations, of packing, shipping, and forwarding agencies and documents, and of financing shipments. The laboratory work consists of compilation and graphic representation of export statistics.

The usual graduation thesis of the course is specified to consist of an investigation of some economic or administrative problem.

## RELATIONSHIP TO OTHER COURSES

Your committee believes that the proposed course, if established, would broaden the Institute's field of instruction in a manner highly desirable and that it would react favorably upon the courses already established. The economic studies included in the new course could be pursued to a limited extent as electives by the undergraduates of the present engineering courses, or could be taken in entirety by the graduates of these courses in a fifth year. By placing economic subjects on a par with those in engineering, their dignity would be enhanced in the eyes of the entire student body—a fact which should tend to minimize the apparent lack of regard which so many young engineers now have for the business side of industrial life.

## INSTRUCTING STAFF

The Institute staff of instruction in economics would have to be somewhat increased in order to give the proposed course satisfactorily. Professors Dewey and Doten could without doubt ably handle a number of the economic courses scheduled, but provision would have to be made for additional instructors and assistants and for lectures from the outside. At Harvard the course in industrial organization and that in banking and finance is largely given under the direction of certain outside specialists who not only lecture to the students, but arrange for instruction of a practical nature difficult to obtain otherwise. Your committee thinks this is an excellent arrangement, but believes that it would be hard to obtain in the immediate vicinity of Boston the services of a group of men of the first order skilled in the principal branches of industrial organization and in banking and with experience in teaching, without including a considerable number of those who now give courses at the Harvard Graduate School of Business Administration. It is, therefore, believed highly desirable by your committee, that, if the proposed course be established, arrangements should be made for coöperation with Harvard in giving some of these special subjects. The number of students attending the Harvard School is relatively small. Surely, without much extra expense these courses could be augmented by students from Technology to the advantages of all concerned. But it is not believed that the establishment of the proposed course should be dependent upon such coöperation.



## Cost

The committee has considered the question of the additional cost to the Institute of establishing the proposed course and the best method of financing this increased expenditure. Assuming that coöperation with Harvard is possible, it is believed that the maintenance of the proposed course for the first few years while the number of students was small would involve an increased expense to the Institute of not more than \$5,000 per year. As to the best method of financing this, the committee hesitates to offer suggestions; for it believes that this matter is one which the Corporation would prefer to handle directly. The committee desires to say, however, that if requested by the Corporation to do so, it would be glad to undertake the work of getting together a group of men who would guarantee the estimated sum required for a limited period of years during which the success of the course would, the committee believes, be fully established. Your committee wishes to point out, moreover, that as the proposed course would assist in establishing closer relations with the business interests of the country, it is fair to assume that the ultimate result will be an increased financial support far in excess of the cost of maintaining the course.

## TITLE

The committee recommends that the course be known as Course XV and entitled Engineering and Business Administration. Some fifteen other names have been suggested, Exhibit "C," but all seem open to objections. Engineering and business administration, in the opinion of the committee, seem most clearly to indicate the exact nature of the training which the proposed course should give.

## DEMAND FOR COURSE

In order to ascertain whether there is a demand for a course of the general character proposed, the committee consulted, both personally and by correspondence, about fifty prominent Institute men and others including several well-known educators, all of whom were asked to comment on the general idea and on the detailed schedule submitted. Of these, about forty men have replied, all but two placing themselves on record as being favorable

to the establishment of the proposed course. A number of interesting and helpful changes in our schedule were suggested, several of which have been adopted by your committee and incorporated into this report. As a matter of general interest, we beg to submit as an appendix to this report the committee's letter of inquiry and the substance of all of the replies received. (Exhibit "D".)

#### GENERAL CONSIDERATIONS

The committee believes the establishment of a course in engineering and business administration of the general character indicated by the attached schedule to be highly desirable from many points of view. The time seems ripe, if not overdue, for such action. Business has gradually ceased to be a trade and is becoming a science. Employers, while having little difficulty in obtaining the services of men trained along specialized engineering lines, find it hard to secure assistants able to aid them effectively on the administrative side of their business. There is a real and growing demand for men familiar with the fundamentals of engineering and yet trained in the art and science of business. The difficulties of presenting such a course are no longer serious. A dozen years ago there was no agreement as to what subjects should be taught in order to prepare for business. Today, however, at least one engineering school has a well-designed course of the general character proposed, while books on business subjects seem almost as plentiful as those on engineering. Of course, at the outset there would be difficulties in the way of teaching certain of the economic subjects because of the lack of trained instructors and library facilities, but through coöperation with Harvard, and with the excellent economic library bequeathed the Institute by General Walker as a basis, these two requirements would soon be met.

It has been argued that business cannot be taught at schools, but must be acquired in the field of practical experience. Fifty years ago the same arguments were advanced against the innovation of the modern colleges of medicine and of law. Doctors, it was said, must be trained through work in hospitals—lawyers in the offices of the leaders of the bar. Your committee, of course, recognizes that this is true to a certain extent, but feels confident that the fundamentals of the science of business can be taught to advantage in schools, even if the necessary experience must be acquired in the field of practical endeavor. Much time, it is

thought, would be saved by this more modern method; and the student's mind would be so trained that he would be able to advance much more rapidly in his chosen field.

The thought has also been expressed that there may be danger that the proposed course will attract too many men with the idea that it would lead at once to high administrative positions. This point could be safeguarded by a proper description of the aims of the course in the Institute catalogue and by oral explanations by the advising instructors.

The question has also been raised as to the practicability of doing justice to both the business and engineering studies in a four-year course. With reference to this matter the committee would present the following considerations. In the present courses relative to the separate branches of engineering, the fundamental principles of engineering are studied, and, in addition, considerable time is devoted to the more special sides of the subject. Whether or not this specialization proves of value to the student depends on the kind of work he takes up after graduation. In the proposed course the student will be well grounded in the fundamentals of one of the main branches of engineering, but for the specialization in the same line, there will be substituted general instruction in the principles and practice of business. The committee believes that the course schedule which is appended to this report shows that a fair training on both the engineering and business sides can be given in the four-year period, and that the course cannot be regarded as a superficial one in either of these directions. It is of course obvious that a more thorough education could be acquired in five years than in four years; but it must be recognized that none of the courses given in our educational institutions, whatever be their duration, produce either business men or engineers, except potentially, and that subsequent experience must round out the school training.

In conclusion your committee believes that, if Technology is to maintain in the future its present eminence in the educational field, a recognition of the changes that have come into our industrial and business life, is an absolute necessity. The proposed course in engineering and business administration is designed to train men effectively to meet the new conditions. If established, it should go far towards rounding out the Institute's sphere of service in

accordance with the expressed plans and desires of its founder, President Rogers.

#### RECOMMENDATIONS

In view of the considerations set forth in the foregoing report, the committee recommends that the Alumni Council respectfully express to the executive committee of the Corporation the opinion that there is a real demand and important field of usefulness for engineering graduates who have received, in addition to a fundamental training in science and engineering, instruction in business methods, business economics, and business law; and that the Council express the further opinion that it is desirable that the Institute establish a new four-year course offering such a combined training, in order that it may provide adequately for the education of a large group of students who, while desiring a systematic course of scientific training such as the Institute affords, have interests and aptitudes which fit them for positions on the business side of manufacturing and transportation enterprises, rather than for specialized engineering work.

With respect to the proposed course the committee make the following more specific recommendations:

1. That the new course be designated "Course XV": Engineering and Business Administration.

2. That the curriculum of the course should combine the humanistic and fundamental scientific subjects common to all the Institute courses with a professional training of engineering studies and of business studies along the general lines shown by the tentative outline of the proposed course appended to this report.

3. That in the engineering studies opportunity should be given, by the establishment of options, for some degree of specialization along the lines of mechanical, chemical and civil engineering, with the object of fitting the men to engage, respectively, in the manufacture of machines and machine-made products, in the manufacture of materials, and in transportation and construction work.

4. That the business studies should include thorough courses in political economy, economic history, and economic geography, accounting and statistics, commercial organizations, industrial organization, business law, banking and finance, as well as briefer courses in industrial psychology, argumentation and reports, taxation and insurance, transportation, and foreign trade.

5. That the business studies, like other studies at the Institute, should be taught for the most part, not by formal lectures of a descriptive character, but by requiring the student, through the solution of problems, the study of specific cases, and the preparation of reports, to apply for himself the principles which he is learning.

6. That in providing for the instruction in some of the business subjects, cooperation with the Graduate School of Business Administration of Harvard University should be arranged for if practicable.

7. That the business studies to be included in the proposed undergraduate course should be open also to graduates of the present engineering courses who may desire, in a fifth year, to supplement their engineering knowledge by a training in business administration. And conversely, graduates of the new course should have the opportunity of rounding out their engineering work by devoting to it a fifth year of study.

JASPER WHITING '89, *Chairman.*

J. F. McELWAIN '97.

HENRY A. MORSS '93.

A. A. NOYES '86.

ODIN B. ROBERTS '88.

T. W. ROBINSON '84.

NOTE:—Mr. D. P. Robinson, a member of this committee, withholds his signature from this report stating that he has been unable to give the subject sufficient study to justify himself either in assenting to, or dissenting from the proposed recommendations. Much to the regret of the committee, Mr. Robinson was able to attend but one of its meetings.

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(The above report was presented to the Alumni Council at its meeting May 19th and was fully discussed and heartily seconded by a number of members of the Council and others. It was unanimously voted that the recommendations be adopted and that it be referred to the Executive Committee of the Corporation of the Institute with the request that it be given earnest consideration.)

## EXHIBIT "B"

SCHEDULE OF PROPOSED COURSE IN ENGINEERING AND BUSINESS  
ADMINISTRATION

Option 1, Mechanical—The manufacture of machines and machine-made products. (Textiles, shoes, etc.)

Option 2, Chemical—The manufacture of materials. (Paper, leather, drugs, etc.)

Option 3, Civil—Transportation and construction.

The numbers (1), (2), (3) in the table below refer to these options.

Subjects	Total hours	1st Year		2d Year		3d Year		4th Year	
		Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2
<i>General Studies:</i>									
English Comp. and Lit. . .	330	60	30	60	60	45	75		
Argumentation and Rept. .	60							60	
United States History . . .	60		60						
European History . . . . .	60			60					
German† . . . . .	345	135	135	75					
Military Science . . . . .	90	45	45						
Physical Training . . . . .									
Total . . . . .	945	240	270	195	60	45	75	60	
<i>Science and Engineering Studies:</i>									
Mathematics . . . . .	495 135(1)	180	180	135	135(1)				
Inorganic Chemistry . . .	360	180	180						
Qualitative Analysis . . .	150(2)*		150(2)*						
Quantitative Analysis . .	135(2)				135(2)				
Organic Chemistry . . . .	60(2)					60(2)			
Organic Chem. Lab. . . . .	90(2)						90(2)		
Physical Chemistry . . . .	240(2)							120(2)	120(2)
Industrial Chemistry . . .	90(2)							90(2)	
Chemical Eng. Problems	120(2)							60(2)	60(2)
Physics . . . . .	305			135	135	35			
Physical Laboratory . . .	115			30	60	25			
Precision of Meas. . . . .	20				20				
Heat Engineering . . . . .	225					135	90		
Free Hand Drawing . . . .	45	30	15						
Mechanical Drawing . . .	180	90	90						
Descriptive Geometry . .	45			45					
Mech. Engineering Draw.	75				30	45			
	150(1)					60(1)	90(1)		

(OVER)

# Engineering and Business Administration 407

Subjects	Total hours	1st Year		2d Year		3d Year		4th Year	
		Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2
Machine Design . . . . .	180(1)			90	90			105(1)	75(1)
Mechanism . . . . .	180								
Mechanic Arts . . . . .	150(1)*				150(1)*				
Applied Mechanics . . . . .	270					135	135		
Applied Mech. Lab. . . . .	30						30		
Mech. Eng. Lab. . . . .	90						90		
Dynamics of Mach. . . . .	75(1)							75(1)	
Electrical Engineering . . . . .	60					60			
Electrical Eng. Lab. . . . .	90						90		
Surveying . . . . .	135(3)				135(3)				
	150(3)*				150(3)*				
Railroad Engineering . . . . .	100(3)					60(3)	40(3)		
Railroad Drawing . . . . .	50(3)						50(3)		
Theory of Structures . . . . .	180(3)							105(3)	75(3)
Hydraulics . . . . .	90(1,3)							90(1,3)	
Hydraulic Engineering . . . . .	105(1,3)								105(1,3)
Dynamic Geology . . . . .	75(3)							75(3)	
Total . . . . .	3470	480	615	435	620	495	525	270	180
<i>Economic Studies:</i>									
Political Economy . . . . .	90			90					
Economic Geography . . . . .	30				30				
Economic History . . . . .	60				60				
Accounting . . . . .	180				90	90			
Statistics . . . . .	30						30		
Commercial Organization . . . . .	180					90	90		
Industrial Organization . . . . .	180							90	90
Industrial Psychology . . . . .	60							30	30
Business Law . . . . .	180							90	90
Banking and Finance . . . . .	180							90	90
Taxation and Insurance . . . . .	30							30	
Transportation . . . . .	30							30	
Foreign Trade . . . . .	30							30	
Thesis† . . . . .	240†								240†
Total . . . . .	1,500			90	180	180	120	390	540

\* Taken in the Summer School.

(OVER)

† Thesis to consist of an investigation of some economic or administrative problem.

‡ French or Spanish may be substituted for German in Option 1 and 3.

## SUMMARY

Subjects	%	Total hours	1st Year		2d Year		3d Year		4th Year	
			Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2	Trm. 1	Trm. 2
<i>General Studies:</i>	16	945	240	270	195	660	45	75	60	
<i>Science and Engi- neering:</i>										
Common to all . .	44	2585	480	465	435	335	435	435		
Special "Options"	15	885				285	60	90	270	180
<i>Economic Studies:</i>	25	1500			90	180	180	120	390	540
Total . . . . .	100	5915	720	735	720	860	720	720	720	720

### Progress of the Alumni Fund

It is a pleasure to announce that the Alumni Fund passed the half million mark on June 4 and contributions are still coming in so that on the first of July it amounted to \$501,335.38.

Although the increase in amount of money has been small during the past six months, over 20 per cent. of the number of subscribers have sent in cards during that period.

The total number of subscribers to July first is 2,576 or 27.6 per cent. of the entire number of men on the roll of former students.

The Fund Committee is still actively at work, hoping to increase this number very materially. No sum is too small to show the good will of a former student to the Institute and recognizing this, several of the classes have advanced their position in the percentage list very substantially during the last month or two.

The largest number of subscriptions for the month of June was sent in by the class of '04. The next class in point of activity was the class of '93.



## TRAINING AËRONAUTICAL ENGINEERS

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Charles M. Chapin, in the "Boston Transcript," tells of the importance of this new branch of engineering science

The course of lectures announced for the coming half-year at the Massachusetts Institute of Technology marks the opening of a new era in aviation in this country. The construction of aëroplanes here has hitherto been an art. It is today in process of becoming a science, and in this development the course at the Institute constitutes the initial step.

Technology, which turns out many varieties of engineers, electrical, civil, mechanical and others, is now looking toward the production of the very latest of all, the aëronautic engineer. Undoubtedly the future will afford a wide field for his activities. Already, abroad, the builders of heavier-than-air craft are depending more and more on experts who possess technical knowledge, and America will never progress in aviation until similar methods come into use here. A prerequisite, however, to the development of scientific construction is the aëronautical laboratory, and this is something the Institute must have before extending its curriculum to embrace training for men who will help aviation.

### EXPERIMENTS THAT CAME TO NOTHING

When the flying machine first publicly appeared in this country, back in 1908, it will be remembered what universal enthusiasm was aroused. Immediately most educational institutions, or men connected with them, cast about to discover means for sharing in the benefits of the new kind of locomotion. Colleges and schools all over the country founded aëro clubs and went to work building aëroplanes and gliders with a vim which did credit to their energy rather than to their understanding.

Out of all this furore has come absolutely nothing of value to aviation. Various organizations frittered away their time and their money, and, when they were through, had such specimens as the Harvard I and II, the Tech, Tufts, Dartmouth gliders and

goodness only knows what else. All of this effort, if expended along proper lines, would have produced valuable results. But everyone was in a hurry to get into the air—by any means whatsoever. All considerations, including safety, were thrown overboard and the only reason why some of the *aéroplane* builders did not come to grief was because none of them succeeded in producing a machine which could get an appreciable distance above the ground.

To the rule of general hysteria, however, there was one notable exception. As long ago as 1896, at Technology, through the work of Gaetano Lanza, now professor emeritus, a beginning was made in a direction where educational institutions could really be of service. Working with an apparatus which was woefully inadequate because of lack of funds, he directed the work of several students in *aërodynamics*.

His experiments were directed mainly to ascertain the lift and drift of surfaces at different angles in air-currents of varying speed. As the only data available were Langley's it was thought best to begin at the very beginning and test actual plane surfaces and not curved wings such as are used for *aëroplanes*. Professor Lanza described these experiments at an informal meeting of the New England *Aëro Club* in April, 1910, and the writer, in an article written for the *Transcript* later in the same month, said:

"As a matter of fact, the work with power machines or gliders in colleges is likely to yield very meagre results. One of the prime requisites for satisfactory practical experiments with flying machines is capital. If results are to be secured, an *aéroplane* must be constantly altered—in many cases rebuilt—to embody changes found beneficial. This takes both money and time, neither of which can be given by either students or colleges. And furthermore, the college men who take up *aëronautics* must study the subject from the beginning and cover ground already trod before they get to a point where their knowledge can possibly bring out anything of value.

#### A FORECAST OF POSSIBILITIES

"But there is a line of investigation possible in the colleges which will be of the greatest use in the development of aviation, and that is the study of *aërodynamics*. This subject has already been taken up to a certain extent, but without apparatus adequate to secure as suitable results as might be desired. The pioneer

in respect to such work in American institutions is Professor Lanza of Technology.

"One of the most important features of the aëroplane is the proper curve for the supporting surface. In experiments with full size machines this is a difficult matter to determine, as there is not, at present, sufficient data for the purpose. Builders must go ahead more or less blindly, whereas the variation of the curve of a wing by only a fraction of an inch may make a difference of many pounds in its supporting power. It is here that Professor Lanza's work comes in. A number of years ago he installed a blower and with a number of students began experiments with plane surfaces testing their supporting power at speeds up to fifteen miles an hour."

The apparatus, however, was not suitable for the best work owing to the low speed of the wind current, and the designing of a different type of apparatus capable of giving sufficiently high velocities to produce results applicable to the practice of today has been considered by the instructing staff of the engineering laboratories. At the present time there is no aëronautic laboratory in the United States, and builders are forced to go abroad for the information which is so essential.

In the various countries of Europe there are a number of experimental stations which are constantly furnishing to the constructors the results of their experiments. Most famous and best equipped of these is the Eiffel laboratory in France, where the downwardly converging tandem plane principle first suggested and then patented by Robert D. Andrews of Brookline, was tested with the wonderful results described in a *Transcript* article last September.

#### WHAT IS DOING IN EUROPE

The tremendous progress made in Europe during the past two years has been very largely the result of laboratory tests. It is due to this experimentation that aviation and aëroplane construction has been raised from an art to a science. Formerly it was necessary for the builder to work by rule-of-thumb methods. He brought out his machine, not knowing whether or not it would fly, and altered here and there until he was able to get into the air. He was not certain, until he tried it, how much support a given curve of surface, driven at a given speed, would afford him.

Only from actual flight could he estimate the varying head resistance of different sizes and arrangements of bracing, chassis, and out-rigging.

Today he either has the information already at hand, or can obtain it from an engineer. In fact, the development of the Nieuport monoplane, the first speed craft, was wholly scientific. Nieuport worked out his figures by laboratory experiment and applied the result to a full-sized machine, knowing just what to expect from it before it had left the ground. All of the European constructors have been forced to follow this method.

The lack of this exact knowledge in America has proved to be a great handicap, and already steps are being taken to remedy it. Last month President Taft, it will be recalled, named a commission to consider the establishment of a national laboratory for aerial research. All governments, however, move slowly, and none more so than that of the United States. It is imperative that steps be taken immediately to build a laboratory if America is to fall no further behind in the race for the supremacy of the air.

Under these circumstances Technology could confer no greater boon on aviation than the establishment of a thoroughly equipped experimental station. The course of lectures offered by the mechanical engineering department to the seniors in mechanical engineering, and to other students suitably prepared, is to be given during the months of February and March by Albert Adams Merrill, founder of the Boston Aeronautical Society. Mr. Merrill has long been a close student of aviation. In fact, as far back as 1895, '96 and '97, the years of the production of James Means's Aeronautical Annual, which started the Wright brothers on their way, Mr. Merrill was at work with the other members of the society and has closely followed all developments since.

#### THE PROMISE TO THE STUDENT

The lectures of which there will be six, will outline the history of aviation on a real scientific basis, and then go on to show how results of experiments in the laboratory are to be applied by the aeronautic engineer, using for this purpose the coefficients ascertained by Eiffel and others. Problems solved will be, for example, how much of a load an aeroplane will support at a given speed; figuring the efficiency of different machines and

systems of control, etc.; the lift and head resistance of surfaces, the resistance of wires, struts, chassis, etc., being known, the rest is nothing more than a mathematical computation.

More exactly, the whole subject will be treated under the following heads:

1. Aëronautical terminology.
2. Early gliding experiments.
3. Research work of Langley, Maxim, Lillienthal, Hargraves, Chanute and Eiffel.
4. Coefficients of resistance of Eiffel and others and methods of using these coefficients in calculating the resistance to surfaces, struts, wires, etc.
5. Fore and aft and lateral stability. How it is obtained and the efficiency of machines and control systems.
6. Construction details of modern machines.
7. The dangers of flight, present needs and the future of aviation.

All the lectures will be illustrated with blackboard diagrams, lantern slides of machines in flight, besides the notes which will be given to each student, and students will be required to work out problems such as designers constantly have to solve.

As yet the surface of aërodynamics has been little more than scratched. The experimental work must cover a field so vast that it almost staggers comprehension. Think, for instance, of the infinite variety of cambers which must be tested! Then combine with this the curve of the upper side of the wing, the shape of the entering edge, and the rear edge! Add to this the working out of the head resistance of varying shapes of bodies, bracing, struts, chassis, and many more details, and one sees the complex nature of the problems to be solved.

#### LOOKING NOW TOWARD "TECH"

These are the things which the aëroplane constructor must have ascertained for him in laboratories before he can go ahead. Boston takes great pride in the Institute of Technology and the quality of its work, and will feel prouder still if it is the first in America to equip an adequate aërodynamical laboratory.

## SCHOOL FOR HEALTH OFFICERS

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### Technology and Harvard in Coöperation offer unusual opportunities in a two-year course

Announcement is made that the first work in which the much talked of coöperation between the Institute and Harvard University is to be effected has been outlined and the confirmatory votes have been cast by the members of the two corporations. It is an arrangement whereby the students in public health, biology and sanitary matters may have the benefits of the corresponding courses in the other college.

The Technology course in biology, now of more than twenty years' standing, together with that in sanitary engineering, have graduated about 325 students with the degree, B. S., who are occupying prominent places in health work, bacteriology, sanitary engineering or teaching. This is a notable record which has called attention to the place of the engineer in health problems. There is no disposition in any quarter to disturb this course, which demands four years of study in engineering at the standards upon which Technology insists.

The Harvard course, which leads to the degree, D. P. H., (doctor of public health) approaches the subject from the academic and medical sides. It is a course established within a few years. The D. P. H. is a degree requiring first the M. D., and is open to no other students, and two years of special study and thesis work are necessary for graduation. There is no disposition to disturb this course.

The development of sanitary work has been such in this country that it is felt by these institutions that a new course is desirable. There are men fitted for ultimate health work, who do not wish to become either engineers or physicians, and it is distinctly the trend of the times to have such men, who are sanitarians, with some knowledge of medicine in public health administrative work.

It is, therefore, proposed to give a course in which both colleges shall join, which shall in two years prepare students for health work. There will be required in the students intelligence and

education, and a good foundation in biology, chemistry and physics. A schedule is to be arranged, equivalents established and the two institutions will be ready to furnish studies on their individual sides. Each will offer anything in the prescribed combination of studies and each is at liberty at present to duplicate what it wishes of the other's facilities. Neither Harvard nor Tech will sacrifice any present work or ambitions. There will be the opportunity for Harvard men to get the benefit of Professor Sedgwick's experience, and the Tech men will listen, if they wish, to their own predecessor in the Institute courses, Professor George C. Whipple, '89, while both groups will be afforded the splendid facilities of the Harvard Medical School and its staff, and what is not to be duplicated, some hospital experience, which every health administrator ought to have.

For the management of the new course, the two corporations have agreed upon an executive committee comprising, Dr. W. T. Sedgwick, chairman, Prof. G. C. Whipple and Dr. M. J. Rosenau, the latter of whom will be the director of the school.

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### New Members of the Alumni Association

The following former students were elected members of the Alumni Association on the dates indicated:

November 12, 1912: Warren U. C. Baton, '04; Hermann Behr, '10; Frank Pierce Bronson, '79; Charles Custer Brown, '93; Harvey U. Hart, '96; Roy L. Hayward, '11; James Humphreys, '95; Harold Edwin True, '08.

December 19, 1912: Samuel S. Dearborn, '84; Minot S. Dennett, '11; Joseph K. Heydon, '08; George C. Kenney, '11; Clarence L. Kimball, '86; S. Fischer Miller, '86; H. Mortimer Montgomery, '79; Arthur Kenneth Poor, '08; Albert F. Schmidt, '85; Sidney Fuller Smith, '86.

January 2, 1913: Francis M. O'Neill, '11; E. Carhart Van Syckel, '11.

February 17, 1913: Philip D. Borden, '73; Clarence W. Dow, '11; P. L. Fong, '84; Hall Sargent, '11; J. Craig Watson, '11; Carl M. Williams, '07.

April 12, 1913: Winfred S. Boynton, '12; Walter P. Henderson, '91; King Yang Kwong, '84; George N. Leiper, '94.

## COMMERCIAL RESEARCH AT TECHNOLOGY

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Large concerns contributing funds for the direct advancement of knowledge and not private gain

President Vail in making the announcement to Dr. Maclaurin of the intention of his company to endow research in the Technology laboratories, called attention to the growing feeling on the part of large commercial interests that it is good judgment to invest in scientific researches of broad scope, and in so doing presents another aspect of the matter of commercial research versus research in educational institutions that is not always fully realized, namely, the effect on the men engaged in the two kinds of work. In the great corporation the atmosphere is that of commercialism, the talk is of big figures of large salaries, and the young man may readily absorb ideas that will cause him to quit research for the great struggle of active business, where permanence of position, uniformity of product, and skill in investigation with other good factors are sacrificed to the rush for money.

Much of the work of this kind in the past has been behind closed doors in private laboratories, and solely along lines of visible advantage in a business way. Lately, however, endowments have been made in which the direct benefit is not the fundamental purpose, but rather the advance in knowledge. So far as Technology is concerned, the ice was pretty effectually broken more than a year ago by the fund furnished by the Edison Electric Illuminating Company of Boston for motor vehicle research, in which the company asked only the facts and their speedy publication for the benefit of the world. Of similar nature is the Keith fund for research in the bacteriology of eggs. In both instances the prime object is to get at the truth, whatever it might say.

Broader than either of these is the fund that is to be furnished by Mr. Vail's company. It will be of important size and the Institute is in no wise limited in the field of work in which it is to be expended, save by the words, "electrical investigation." Technology is free, therefore, to determine for itself in what directions



may lie the matters most urgent or most valuable. Such freedom in giving is certainly a freedom much to be commended.

The atmosphere of the educational laboratory puts commerce in the background and substitutes interest in the work. Here it is that patient men, filled with enthusiasm at adding to the world's store of knowledge, may study and experiment under the most favorable conditions. With greater responsibilities the laboratories may hold out to research assistants, opportunities and advantages which have thus far only been possible in other lands, where research has become a principle. With the splendid facilities they possess, the equipments of much institutions as Technology will, without doubt, prove of great advantage in forwarding the efficiency of business by gaining for it the precise facts of science. Thus it may be said that research in educational laboratories, endowed by commercial interests for broad investigations, is the coming word in efficiency.—*The Tech.*

### New Hammer Throw Cage

A "cage" for hammer throwing has been erected at Technology field, Brookline, which is probably the only one of its kind in this country, at least, and is of the very best possible construction.

This grille cage is to protect the judges and spectators from any accident that might be liable to occur in the throwing of the hammer and is especially heavy and strong.

It is seven feet high and made on a radius of 13 feet 6 inches, with one third of the circumference left open in the direction in which the hammer is thrown.

It is constructed of one quarter inch wire crimped to form a diamond mesh measuring  $2\frac{1}{2}$  inches horizontally by 5 inches vertically, the wires being set into a heavy channel iron frame, and clinched over in the channel.

## NEWS FROM ALUMNI CLUBS

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### Annual report shows New York Club prosperous—New officers elected by Technology Club of Puget Sound—Annual Meeting of Cincinnati Club

TECHNOLOGY CLUB OF NEW YORK.—At the annual meeting of the club in February the following candidates for the board of governors were unanimously elected: J. Parker B. Fiske, '89, to serve for five years, representing classes '89 to '93; L. D. Gardner, '98, to serve for three years representing classes '98 to '02; Ira Abbott, '81; Benjamin Hurd, '96; N. G. Nims, '90; J. Waldo Smith, '87, and Gerard Swope, '95, all to serve for one year representing the membership at large. The officers of the club as chosen by the governors are: Benjamin Hurd, '96, president; J. Waldo Smith, '87, vice-president; Walter Large, '78, secretary, and Ira Abbott, '81, treasurer.

At the annual meeting a proposed amendment providing for an initiation fee of \$20 for resident and \$10 for non-resident members was defeated. Four other amendments were adopted as follows:

1. A provision rendering all persons who have been officers or members of the Corporation of the Institute eligible for membership in the club.

2. A provision creating honorary members to include the President and ex-Presidents of the Institute.

3. A provision establishing life membership and making the life membership fee \$500, but exempting life members from all other dues or charges.

4. A provision constituting retiring members of the board, who have been officers of the club, an advisory body entitled to attend the meetings of the board of governors, but without the right to vote.

The treasurer's report for 1912 shows a total cost and expense account of \$29,884.93, and a total income of \$30,675.05, leaving a net profit of \$790.12. Ten standing committees of the club have been appointed with the following chairmen: annual dinner committee, E. H. Huxley, '95; building committee, N. G. Nims, '90;

business opportunities committee, K. Spalding, '89; entertainment committee, R. H. Howes, '03; house committee, O. C. Hering, '97; library and art committee, F. A. Colby, '01; membership and business directory committee, J. P. B. Fiske, '89; nominating committee, D. W. Edgerly, '98; publicity committee, C.-E. A. Winslow, '98; reception committee, F. C. Schmitz, '95.

A very successful smoker was arranged for the classes of '98, '10, '11, and '12 by G. F. Shaffer, '10, on the evening of March 10. Dr. Thomas Darlington, secretary of the welfare committee of the American Iron and Steel Institute, gave an interesting illustrated address on the far-reaching sanitary and social reforms which the Institute is effecting in the iron and steel and mining industries of the country. Representatives of several of the other clubs in the park were guests at the dinner and smoker and all adjourned to the Arts Club for music at the end of the evening.

The house committee (O. C. Hering, '97, chairman) has made many improvements in the routine management of the clubhouse. An à la carte service with a special menu has been provided and the whole café and restaurant service has been notably improved. The entrance hall has been made more attractive and convenient by re-arranging the desk and cigar stand; and private letter boxes (to be rented at \$2.00 a head) are being installed. A telephone switchboard is being placed in a closet on the second floor. The hour for closing the clubhouse has been advanced to 1 a. m.

At its May meeting the board of governors passed the following resolution:

WHEREAS, The Technology Club of New York, at their last annual meeting, voted a change in their by-laws to provide for an Honorary Membership "To include members who at any time were elected President of the Massachusetts Institute of Technology" and stipulated that members so elected should accept such election before they become qualified members.

*Resolved*, That the board of governors hereby tender to Dr. Richard C. Maclaurin, Prof. James M. Crafts, Dr. Henry S. Pritchett and Prof. Arthur A. Noyes, Honorary Membership in the Technology Club of New York.

*Resolved*, That the secretary be directed to send a copy of this resolution to the gentlemen above named with a request for their acceptance of election to membership in the club.—*Walter Large, '79, Secretary, 15 William Street, New York, N. Y.*

THE CINCINNATI M. I. T. CLUB.—The annual meeting and get together dinner of the Cincinnati M. I. T. Club was held Saturday evening, April 5, 1913, at the Business Men's Club. At this dinner we planned to get away from formality to just as great an extent as possible, even to the secretary's omitting to prepare his minutes, for which he was fined two years dues in advance. In this connection our notices were prepared to give the fellows a chance to get back at each other by advising the committee as to stunts at which others were particularly adept.

We managed to gather together about twenty-five fellows and with the aid of Pork Chop's Band (a famous group of colored musicians in this vicinity) we managed to have something doing most of the time.

The ball commenced rolling when the president made the opening announcements as we were finally started. Loring, '07, was appointed cheer master and showed to good effect with a solo cheer following the "Regular M. I. T." Stanwood, '75, was choir master but his duties were usurped by Merrill, '88, who assisted Pork Chops through the mysteries of "Take Me Back to Tech" after which the illustrious Pork made the remark "I sure will never try to say them words again" and mopped his brow. The report of the nominating committee gave rise to another whirl. There was a howl at the supposed "State" which in these days of purified politics is a dangerous term. Whereupon the chair appointed an investigation committee which with the legal mind of Nathan, '99, had the poor nominating committee on the rack. The result of the "investigation" was that the investigating committee appointed themselves as a new nominating committee and brought back the same list of nominees which were finally elected: For president Stanley A. Hooker, '97; for vice-president, Herman W. Lackman, '05; for secretary, Stuart R. Miller, '07; for treasurer Robert Andrew, '01; executive committee nominee J. E. Barbow, '05; the above with R. W. Procter, '94, and Theodore Green, '05, constituting the executive committee.

As we have a number of members connected with the city administration in various capacities in the engineering, sanitary, sewage and waterworks departments, a sewage committee was appointed to pass on the merits or demerits of the various impromptu remarks and in consequence of their activities the treasury was considerably fattened. This meeting was the first public appearance of Ander-

son, '11, and Hargrave, '12, and they were made to "show cause" which they did very creditably. We were greatly disappointed in not being able to carry out part of our program in which we had hoped to settle for all time the question as to which of the two, Hooker or Pugh (both '97), had saved the other's life in Dorchester Bay, but Hooker was "detained" in the flooded districts of the Miami valley. The detention afterwards being discovered to be caused by a balky automobile which with all Hook's technical vocabulary could not be made to move. Speaking of vocabularies, Proctor, '94, tried to "out-Fetch" Fetch on the motor boat question and managed to put Pugh to sleep. But perhaps he was not asleep after all as at that time he was busy preparing for his wedding which has since occurred.

To show that there were no hard feelings Proctor and Pugh joined forces with Stanwood, '75, and Merrill, '88, in the Wheel Horse Quartet (these four men having been mainly responsible for the founding of the local alumni club).

In the recently published program for the contest for the position of architect of the proposed new Court House for Hamilton County which is to occupy some two or three city blocks it is interesting to note that more than two thirds of the firms invited to compete are headed by Technology men—both local firms and out-of-town.

Lackman, '05, is already interested in the broader development of Technology whereby Radcliffe and other co-ed departments of the larger universities will be eclipsed, as on April 19 he became the proud father of a daughter Elizabeth.

On April 24, A. H. Pugh, Jr., '97, took unto himself a bride, who was Miss Elizabeth Worthington, and the Cincinnati M. I. T. Club learned that now all of its founders had become benedicts and were duly appreciative of that indication of its increasing age.

The club now turns its attention to the summer outing and feels sure that this year it will be necessary to have a kindergarten department along with the "better halves."

All Tech men who make Cincinnati a stopping place are again reminded of the regular weekly lunch of this club at the Bismarck (main dining room), Mercantile Library Building, on Tuesdays from 12.30 to 1.30.—*Stuart R. Miller, 1907, Secretary, 3366 Morrison Avenue, Clifton, Cincinnati, Ohio.*

INTERMOUNTAIN TECHNOLOGY ASSOCIATION.—By unanimous choice of the city commission, Sylvester Q. Cannon, '99, was

appointed on March 28, city engineer to succeed David H. Blossom '98, resigned. Mr. Blossom left the city's service April 1, and Mr. Cannon stepped into his position at that time.

David H. Blossom remained in the city for some time to render whatever assistance was necessary by the change in the administration of the engineering department. Later he became identified with a large private company engaged in engineering work in Utah, Idaho and Oregon.—*Gregory M. Dexter, '08, Secretary-Treasurer, Box 195, Salt Lake City, Utah.*

TECHNOLOGY CLUB OF PUGET SOUND.—Technology Club of Puget Sound held its regular monthly luncheon and annual meeting at the Arctic Club, May 20, 1913. Clancey M. Lewis, '99, who has been serving the club in the capacity of vice-president, was elected president to succeed Charles H. Alden, '90. G. E. Channing, '75, was elected vice-president, and Joseph Daniels '05, was made secretary-treasurer.

This club, which is an alumni and former-student association of the Massachusetts Institute of Technology, is the largest organization in the Greater Northwest of technical students of any one institution of this character. It embraces a representation of seventy-five, scattered through the cities of Bellingham, Bremerton, Du Pont, Everett, Kapowsin, Olympia, Port Angeles, Port Townsend, Puget Sound, Raymond, Seattle, Tacoma and Wilkeson, Washington.

Its membership includes many well known engineers, architects, constructionists, operators of public service corporations and manufacturers. Brownell, '90, is senior civil engineer, U. S. N., Bremerton; Daniels, '05, and Eastwood, '02, are professors at the University of Washington; Mooers, '04, is chief operator of the city light plant, Seattle; Ober, '94, is superintendent of buildings, Seattle; Roberts, '91, is Washington state highway commissioner, Olympia; Ewart, '00, was former city engineer, Aberdeen; Mason, '70, is engineer of United States fortifications, Fort Worden; Yates, '07, naval constructor, U. S. N., Bremerton; and Crosby, '71, Northern Pacific, Tacoma.

Among the architects are Alden, '90; Badgley, '94; Everett, '98; Myers, '98; Potter, '97; and Geary, '10, the naval architect and international yachtsman.

The constructionists include several active men in the Stone & Webster Corporation; Lee, '03, Aberdeen; Nelson, '02, Trussed

Concrete Steel Company; Taft, '96, who is now sharing in the work of the 42-story Smith building, Seattle, and Harvaugh, '95, United States Steel Products Company.

Operators of public utilities include Bixby, '92, telephone company, Seattle; Harrington, '04, assistant general superintendent, Seattle division Puget Sound Traction, Light & Power Company; Rounds, '89, general superintendent Puget Sound Electric Railway, Tacoma; and Sturtevant, manager, Everett Light & Water Company.

Manufacturers include the Frink brothers, of the Washington Iron Works; Harrington, '05, superintendent Du Pont powder plant, Du Pont, Washington; Isham, '01, manager of the West Coast Iron Works, Seattle; and Matheson, '99, sales manager, Seattle Construction & Dry Dock Company.

The new president of the club, Clancey M. Lewis, '99, has been a practicing mining engineer, a professor in a college at Canton, China; for six years past editor of *Pacific Builder and Engineer*, and for two years past the secretary of the Municipal League of Seattle. He is actively identified with the press, scientific, social, political and commercial organizations of the city.

G. E. Channing, '75, vice-president of the club, is a special agent of the United States treasury department, with an office at 304 Federal building, Seattle. He has been one of the most active members of the club during the past year.

Joseph Daniels, '05, newly elected secretary, is assistant professor of mining engineering and metallurgy, college of mines, University of Washington, Seattle. He is also a graduate of Lehigh where he was acting head of the department of mines, and from where he was called to his present position. He is secretary of the Puget Sound Section of the American Institute of Mining Engineers, is a member of other national scientific societies, of local public organizations, and takes a lively interest in all university affairs.—*Alaska Progress Number*.

## TECH FACULTY CHANGES

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### Corporation Confirms a Number of Promotions and Appointments

The Corporation of the Institute at its meeting June 6, confirmed the several promotions, appointments and reappointments in the instructing staff of the Institute. Dr. J. Arnold Rockwell was appointed medical adviser in place of Dr. F. W. White, and Associate Professor F. A. Laws was promoted to professor of electrical engineering. The following assistant professors were promoted to the grade of associate professors: Earle B. Phelps, to associate professor of research in chemical biology; S. P. Muliken, to associate professor of organic chemical research; M. S. Sherrill to associate professor of theoretical chemistry; G. E. Russell, to associate professor of civil engineering; Ervin Kenison, to associate professor of drawing and descriptive geometry; N. R. George and L. M. Passano, to associate professors of mathematics; M. deK. Thompson, to associate professor of electrochemistry; L. E. Moore, to associate professor of civil engineering. Two instructors were promoted to the grade of assistant professor; Edward Mueller to assistant professor of inorganic chemistry, J. W. Howard to assistant professor of topographical engineering. A number of assistants have been promoted to the grade of instructor, namely, N. S. Marston, to instructor in electrical engineering; Duncan MacRae, to instructor in inorganic chemistry, replacing C. R. Cressy; Dean Peabody, to instructor in mechanical engineering; W. H. Wengert, to instructor in mechanical engineering; W. J. Murray, to instructor in analytical chemistry, replacing Mr. Fallon, assistant; and C. K. Reiman, to instructor in inorganic chemistry. Assistant J. M. Livingston has been made research associate in applied chemistry. The following are the new appointments, mostly for one year: Edward A. Ingham, made assistant in biology; Robert D. Bonney, Warren E. Glancy, Leon W. Parsons, and Charles S. Venable (half time), made assistants in analytical chemistry, replacing E. T. Marceau, P. M. Tyler, C. K. Reiman (promoted) and J. A. Gann, respectively; F. W. Lane and Philip B. Terry, assistants in organic chemistry, replacing W. J. Murray and J. W. Livingston (promoted); Arthur



E. Bellis and Charles L. Burdick, assistant in theoretical chemistry, replacing B. F. Brann and Duncan MacRae (promoted); Lester F. Hoyt, halftime assistant in water analysis, replacing W. J. Daniels; Francis H. Archard, Henry C. Harrison and Russell E. Leonard, assistants in electrical engineering, replacing D. M. Terwilliger, J. P. King and H. G. Jenks; Edgar W. Taft, assistant in military science, replacing A. J. Pastene; John P. Constable, assistant in naval architecture, replacing R. B. Pulsifer; Warren K. Green and William G. Horsch, assistants in physics, replacing Mr. Wells and Mr. Wilkins; Millard W. Merrill, assistant in electro-chemistry, replacing Mr. Gonzales; R. G. Daggett, research assistant in sanitary chemistry; George Richter and W. B. Van Arsdell, research assistants in applied chemistry; H. F. Thomson, assistant to the director of the research laboratory of electrical engineering and part-time instructor in electrical engineering; Robert E. Rogers, instructor in English; Thomas S. Holden, part-time instructor in mathematics; Clarence Hale Sutherland, instructor in civil engineering, replacing Mr. Bradbury, resigned; Ferdinand H. Pendleton, Jr., assistant in technical analysis, replacing Mr. Bishop. The following are the reappointments: Truman H. Bartlett, instructor in modeling; D. A. Gregg instructor in pen and ink drawing; E. B. Homer, instructor in architectural history; Samuel W. Mead, instructor in architectural design; Edward F. Rockwood, special lecturer in concrete; Ross Turner, instructor in water color; C. Howard Walker, instructor in the history of ornament; Percy G. Stiles, instructor in biology; Ralph H. White, instructor in inorganic chemistry; John F. Norton, instructor in chemistry of sanitation; Charles W. Green, instructor in electrical engineering; Frank L. Hitchcock, instructor in mathematics; Jesse J. Eames and William H. Jones, instructors in mechanical engineering; James R. Lambirth, instructor in forging; Joseph Blachstein, Justus Erhardt and George R. B. Meister, instructors in modern languages; Paul R. Lieder, instructor in German; Herbert P. Hollnagel, instructor in physics; Howard B. Luther, instructor in civil engineering; William H. Coburn and George S. Sawyer, assistants in civil engineering; Alfred P. Kitchen and Norman Osann, assistants in electrical engineering; Frank A. Brown, assistant in forging; Harry G. Davies, assistant in woodwork and foundry work; Arthur B. English and James T. Shorrock, assistants in machine-tool work;

Harry M. Mosher, assistant in chipping and filing; Samuel A. S. Strahan and Charles F. Walton, Jr., assistants in inorganic chemistry; Leon A. Salinger, half-time assistant in food analysis; Harold R. Perry, assistant in mining engineering and metallurgy; James H. Ellis, assistant in physics; Frederick G. Keyes, Roy D. Mailey and Arthur C. Melcher, research associates in physical chemistry; Ruth M. Thomas, research associate in organic chemistry; Ernst C. Brent, professor's assistant in chemistry; Charles Cole and Robert Stoddart, lecture assistants to the professors in chemistry, and Elof Benson, lecture assistant to the professors in physics.

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### The Potlatch Chantant

The Potlatch was unquestionably a big improvement over the annual Pop Concert and served in a much better way as an occasion for welcoming the graduating class into the ranks of the Alumni Association.

The entertainment given June 10 had the universal approval of sixteen or seventeen hundred people who were present. From 8 o'clock on, there was never a dull moment and yet although the time was all taken with some form of entertainment, no machinery was in evidence and it all appeared to be more or less spontaneous under the management of George Glidden, '93, and Harry Mork, '99. Several of the anniversary classes contributed stunts, some of them on the stage. The class of '68, presenting one of their number, Eli Forbes, who was "the original student of the Institute." The class of '08 brought in an immense birthday cake borne by several of their number, lighted with five tall candles. Following the cake was a bevy of over-grown children who skipped merrily about the stage and cheered for the class as the top of the cake burst open and a broadside of toy ballons bearing the class numerals rose to the ceiling.

The class of '98 arrived at the hall in a crippled condition after their class celebration at Wianno.

The class of '93 costumed as Indians did some first class yelling, and bloodshed was barely averted by the fact that their intended victim never walked about by day or retired at night without wearing a '93 flag on his person.

The graduating class entered the hall bearing a sarcophagus supposed to contain the examinations through which they had passed, and were presented with the alumni flag of the class by President Fay of the Alumni Association.

Soon after the class was seated Neva Maria Ready, the class baby, was escorted into the room and received a hearty cheer.

One of the pretty features of the evening was the presentation of an immense basket of flowers to Mrs. Maclaurin who had a seat in the balcony, near the middle of the hall. The lights were suddenly darkened and the spotlight directed on the basket of flowers resting on one of the tables on the floor of the hall. By some mysterious trolley system this basket ascended into the air and was neatly delivered on the rail in front of Mrs. Maclaurin.

Those who attended the Potlatch agreed that it was a great improvement on the Pops and that it should be continued.

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### Statement of Ownership, Etc., of the Review

Statement of the ownership, management, circulation, etc., of the TECHNOLOGY REVIEW published monthly except August, September, and October at Boston, Mass., required by the Act of August 24, 1912. Editor, I. W. Litchfield, Massachusetts Institute of Technology; Managing Editor, I. W. Litchfield, Massachusetts Institute of Technology; Business Manager, I. W. Litchfield, Massachusetts Institute of Technology; Publisher, The Alumni Association of the Massachusetts Institute of Technology, 491 Boylston Street, Boston, Mass.; Owner, The Alumni Association of the Massachusetts Institute of Technology, 491 Boylston Street, Boston, Mass. Known bondholders, none. It is a fraternal and scientific publication.

I. W. LITCHFIELD.

Sworn to and subscribed before me this eighteenth day of July 1913. Walter Humphreys, Notary Public. (My commission expires March 4, 1915.)

## DEVELOPMENT IN AERODYNAMICS

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On request of President Maclaurin, Secretary Daniels of the Navy Department has detailed Assistant Naval Constructor Jerome C. Hunsaker for work at the Institute in developing courses in aerodynamics.

The Institute was the first school in the country to fit its laboratories with apparatus for investigating the scientific conditions of wind movement and pressure with reference to the aeroplane and last year established the first course of lectures on such subjects that has been given in the country. This is by no means the sum of the resources of Tech in this department, for there are experts in the mathematics of aerodynamics, others skilled in the principles of construction, and a department that leads the country in naval architecture, if the construction be an air ship; with another also leading the country in mechanical engineering, if the aeroplane be rated a piece of machinery. With this wealth of resource President Maclaurin has felt that it is time for Technology to go into this important work of the future in a thorough and scientific manner, and accordingly he has asked for Mr. Hunsaker, a graduate of the United States Naval Academy and Institute, that he may outline what the best courses may be in the prosecution of the Institute's desires.

The purpose of the courses will be to establish systematic instruction in the theory and design in aeroplanes. The backwardness of this country compared with those of Europe is notable, and Dr. Maclaurin wishes Technology to be the leader, and to take the first large steps, as it has already taken some smaller ones, towards placing the study of the aeroplane among engineering accomplishments, for up to the present time the development of the flying machine has been by the "cut and try" method.

It will be the first idea to send Mr. Hunsaker to Europe where he may have authoritative access to the great aeronautic laboratories, so that he can bring back to Technology all available information. The plan will then be developed and it will be determined how the new work will best fit in with the other studies that the Institute has now already established.

## TECH MEN IN THE PUBLIC EYE

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ARTHUR A. NOYES, '86, received the honorary degree of Sc.D. at the 212th commencement of Yale University last month. In presenting this degree Prof. Woolsey said:

"Arthur A. Noyes—To chemistry and to the Institute of Technology—of which he is a graduate and in which he is professor—Mr. Noyes has given his life. His researches in the several fields of chemistry, analytical and physical as well as organic, attest the breadth of his interests. His many important publications show his scholarship. As an executive he won distinction. As a teacher of chemistry he has no superior. Without reciting his honors, it is enough to say that Professor Noyes is in the very first rank of American scientists."

THEODORE INSLEE JONES, '96, was recently made chairman of the commercial section of the National Electric Light Association. Mr. Jones is general sales agent for the Edison Electric Illuminating Company, of Brooklyn. He is prominent in the commercial side of electrical affairs principally because of the successful application he has made of the higher principles of salesmanship in selling electric service. On leaving the Institute Mr. Jones became connected with the American Telephone & Telegraph Company and while there he originated and equipped the first school of instruction for telephone traffic in connection with a book of complete instruction for handling long distance business.

CASS GILBERT, '80, was successful in competition with six prominent architects in securing the commission for Detroit's new million dollar library. Mr. Gilbert's plan was selected by a jury of librarians and architects, and its decision was confirmed by the Public Library Commission.

WILLIAM O. CROSBY, '76, was recently highly honored by friends in New York who have presented Columbia University with \$1,800 for a collection of lantern slides to be known as the William O. Crosby geological lantern slides.

DANIEL C. FRENCH, '71, received the honorary degree of A.M. at the 212th commencement of Yale University last month. In presenting the degree Prof. Woolsey said: "With the confidence of genius but with a modesty not always allied to genius, he has wrought out his ideas in stone and bronze. Societies have medalled him, academies honored him at home and abroad. His portrait busts, his symbolic figures, his touching mortuary groups show that nobility of conception, that dramatic power of presentation which characterize the truly great sculptor."

HERBERT R. MOODY, '93, professor of chemistry and secretary of the executive council, College of the City of New York, is in residence for the summer term at Oxford University, engaged in the study of von Federon's method of chrysallo-analysis. Mr. Moody is associated with Mr. T. E. Barker of Oxford University who worked with von Federon in St. Petersburg last year. The method has not yet been made public.

FREDERICK A. DEWEY, '10, has been appointed lecturer in economics and sociology at Bryn Mawr College, Pa. After leaving the Institute he became a graduate student and afterward a fellow in sociology at Columbia University.

GERARD SWOPE, '95, was recently elected vice-president of the Western Electric Company of New York. He has been connected with this organization since leaving the Institute, first in Chicago and afterwards in St. Louis where he was manager of the distributing house. In 1908 he became general sales manager with headquarters in New York.

WILLIAM F. STEFFENS, '98, has been appointed assistant engineer of the Chesapeake & Ohio Railway. After leaving the Institute he entered the employ of the New York, New Haven & Hartford Railroad as structural draftsman, subsequently going on the Erie on grade crossing and construction work. Later he became connected with the New York Central & Hudson River Railway Company and more recently was structural engineer on the Boston & Albany road.

WALTER C. FISH, '87, has recently been appointed vice-president of the General Electric Company.

NATHAN C. GROVER, '96, of New Jersey, has been appointed chief hydraulic engineer of the water-resources branch of the

United States Geological Survey, to succeed Mr. Marshall O. Leighton, '96, who resigned early in May to plan and supervise land drainage in Florida.

F. H. NEWELL, '85, director of the Reclamation Service, has been appointed chairman of a new Reclamation Commission by Secretary Lane. The commission will consist of five members, who, besides Chariman Newell, will be George Barton French, A. P. Davis, and Judge Will R. King and one other.

GUY LOWELL, '94, was the successful architect in a competition for New York City's new ten million dollar court house. A jury of architects appointed to pass the design, selected his and the Court House Commission approved the decision of the jury; both decisions were unanimous. Mr. Lowell was the youngest architect who entered the competition. He was graduated from Harvard in 1892, studied at the Institute two years and then went to Paris where he continued his studies at the Ecole des Beaux Arts.

SAMUEL E. GIDEON, '06, formerly instructor in mechanical drawing and descriptive geometry at the Institute has been made associate professor of architecture of the University of Texas, Austin, Texas. He will give his time particularly to architectural design and architectural history.

EDGAR I. WILLIAMS, '08, was recently prominently mentioned in "*The Nation*" for his exhibit of archaeological constructions at the recent exhibition of the Architectural League, New York. Mr. Williams' work and the sculpture of Mr. Manship were the features of the exhibition.

FRANKLIN W. HOBBS, '89, was awarded the honorary degree of master of science at the Dartmouth Commencement in recognition of his successful solution of many intricate problems connected with the textile industries.

JOHN C. NOWELL, '94, has been made general manager of the Pacific Telephone & Telegraph Company with headquarters in San Francisco.

EDMUND HAYES, '73, received the honorary degree of A. M. from Dartmouth at the recent commencement. This recognition of General Hayes is made because of his engineering ability, more especially as a builder of bridges.

## MISCELLANEOUS CLIPPINGS

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That students in the Massachusetts Institute of Technology may have the advantage of scientific training for industrial fields, a new course has been instituted by President Maclaurin. It is called "industrial physics" and is designed to fit men with inventive faculties to solve practical problems in physics, electro-chemistry, and electricity.

### **A New Course at "Tech"**

No other institution in the country gives such a course of instruction. In taking this step it is thought that a long-felt want will be filled. The idea has been latently entertained for several years and the final result brought about after repeated requests from the business world for young men with expert training in physics.—*Toronto Star*, Canada.

The bankruptcy that so often afflicts university societies is unknown at Massachusetts Institute of Technology. The establishment of a students' finance committee, which unifies accounting and insists that means be visible for financing every project undertaken, prevents indebtedness. The sums collected annually amount to about \$30,000, of which \$10,000 represents the receipts from the annual show.—*Detroit Tribune*.

### **They Never Go Broke**

The \$75,000 bequest by C. H. Pratt to Technology calls for the erection of a memorial building, the plans of which are to be approved by the trustees of the fund. The Institute does not desire to erect an elaborate structure, but as a memorial to Mr. Pratt and his father, it can not afford other than a dignified and well constructed one.

### **Use of the Pratt Bequest**

This will use an important portion of the gift, and the cost will be increased by the towing-tank, so that the income from the endowment portion of the Pratt bequest will not be over \$20,000. All of this will be needed by the specialists required to keep the department to its high standard. And every dollar the fund releases to the Institute for general purposes means so much gain.—*Boston Herald*.

The near approach of the time when work will actually begin on the new Technology on the river-front brings out many points of interest to the general public. One of these is the Walker Memorial detailed mention of which is made on another page of the *Tribune*.

### **The Walker Memorial**

The Walker Memorial is be to the "Harvard Union" of Technology,



although on a much larger scale and embracing many more college activities, both social and athletic. Named in memory of the late President of the Institute, General Francis Walker, its plans show that it will be a credit to the Institute as well as to the man whose name it bears.

Few outside the college circle realize the proportions of this new institution which is about to become a part of our city, but such plans as are outlined for the Walker Memorial give an insight into the real conditions.—*Cambridge Tribune*.

The planning for a dormitory system at the new Technology plant on the Charles seems adequate and far-seeing. The sum to be expended, \$600,000, will produce a set of student buildings that  
**Tech's**  
**Dormitories** should house the men for some time to come, and future growth can be provided for as occasion demands.

This determination to give the Institute more of the atmosphere and feeling of a college is wise. It may not educate its men better, but it surely will not educate them any less well, and it will nurture an institutional spirit and cohesion that will supply an advantage Tech has always lacked. In more ways than one the move to Cambridge is to be of great value.—*Boston Post*.

Science may be a twin to business, but as yet this relationship is spoken of only as a venture under President Maclaurin's investigations. As a new study course, linking business and physics, it makes its student appeal. The promise of this course is likewise alluring. If men come to the end of its three years' course with a "well related and fully rounded education," this course should prove to be one of the most popular elective courses of this institution.—*Boston Times*.

The attitude of President Maclaurin of the Institute of Technology toward business, expressed to the manufacturers of Cambridge, is welcome news to the business men of the whole country, as well as to those who conduct industrial concerns in Cambridge. Dr. Maclaurin intends to turn the attention of the great school of which he has the charge, even more toward the field of solving the problems of ordinary business than has been the case in the past. He has pointed out that the problems of modern industry are complex and are attracting the brightest minds toward their solution. He evidently feels that it should be the object of the technical education of the country to assist, as far as possible, in the problems of ordinary business.

There can be no question that the contribution of the Technology graduates toward the achievements of the engineering profession in this

country has been very great. What Dr. Maclaurin seeks now to do is apparently to widen the scope of the engineering profession. Germany has succeeded in gaining a great place in the world business of today largely through two lines of action. One of these has been the use which has been made of trained scientists in the solution of problems, which in other countries would be handed over to capable, but comparatively unscientific foremen. The German man of business finds the holder of a doctor's degree from one of the great universities a tremendous and well nigh indispensable help to him. The other factor in the industrial advancement of Germany has been the wide and thorough training which the rank and file of Germany's population receive in the common schools. No chain is stronger than its weakest link, and one of the strongest links in the German chain is the fact that the ordinary citizen is very capable. This has been due to the industrial education in the German common schools.

There are many signs in this country that industrial education is required in the common schools in order to develop the masses of the people. To a small extent, this has already been begun, but there is still too great a tendency in the American schools to educate boys and girls for luxury rather than for work. It will be a happy day for America when the lower schools begin to take their cue from such educational leaders as President Maclaurin.—*Boston Advertiser*.

The position which the new site gives to the Institute of Technology has few parallels in the history of American education. One of the fore-

**Recommendations for Tech** most educational institutions of this country is to begin all over again, from a property standpoint.

The institution has its customs and its traditions. It imprints a certain stamp upon its graduates, but, when the new site is occupied, it will be possible to change all those things which are thought to need change. This has not been so with any American institution of the first standing in the educational world, except for professional schools. Most of the great colleges, whether academic or scientific, have occupied a certain site from the beginning. As they have grown, there were certain things which became a part of them, by the force of their surroundings and could not be abandoned, but Tech is to begin anew.

The change is one that affects student life and student customs more than it affects the life of the class room, the laboratory and the shop. So far as the serious work of the Institute goes, the change will not be felt so greatly, because it will simply mean new buildings, new laboratories, new shops. But in the life of the students, the change means an uprooting of the old. In a measure, the social life of Tech men is now plastic. It may be moulded. At once the whole question of the relations of the students to one another and to the whole student body becomes an open question. At this point, the Alumni Association of the Institute, through

a committee, have formulated certain recommendations as to the provisions for the organization of the student life. The recommendations are not binding in any way, but it would be impossible for them to be entirely ignored, because of the great desire of the authorities of the Institute to hold the interest of its graduates.

The dormitory is made the center of the recommendations, and the arrangement of the dormitories and all which concerns them is treated exhaustively in the recommendations. It is interesting to find that the Tech graduates are in favor of mixing the four classes as much as possible. At the time that Harvard has taken up the freshman dormitories, this is something of a contrast. Possibly the difference is to be found in the difference in size between the two institutions.

Evidently the alumni committee have taken seriously the problem of the differences in wealth to be found in the undergraduate body. While ample bath facilities are to be urged, suites with private baths are unqualifiedly condemned. It is also urged that student accommodations be as uniform as possible in respect of general character and service.

Modern ideas of living have also their place in the recommendations. The suggestion that fresh air sleeping rooms be provided, as far as possible, strikes a distinctly modern note. For the dining hall, the employment of a dietetic expert has been suggested. This is also distinctly modern. A study of the most economical and systematic, as well as of the most hygienic methods of handling food supplies, is also emphasized. At the close of the recommendations the relation of the fraternity system to student life is treated. The aim of keeping fraternity and non-fraternity men in close contact is made a desirable end and it is recommended that the fraternities be permitted to lease sections of the dormitories. As the fraternities are considerably represented on the committee there can be little doubt that these important recommendations will be taken kindly by the organizations themselves.—*Boston Advertiser*.

President Richard C. Maclaurin of the Massachusetts Institute of Technology announces the establishment of a course which is believed to be unique in educational institutions—one in industrial physics. This is the outcome of the need for men trained in physics for the solution of problems that present themselves to the industrial world. President Theodore N. Vail of the American Telephone and Telegraph Company has said that more and more business firms find it to their interest to undertake research in chemistry and physics, the direct relation of which to their specialties is not always obvious.

The suggested course differs from those hitherto constituting the course of physics in that it requires a less extended study of pure and applied mathematics and a fuller consideration of applied physics, both in the

lecture room and laboratory. The study of applied optics, heat measurements and electric measurements is greatly extended. Much time is devoted to theoretical and applied chemistry. A very considerable amount of study in mechanical and electrical engineering subjects is required, and electrochemistry, pure and applied, and metallography are likewise included. The course as arranged is such that a man completing it should possess a knowledge of physical investigation and methods of dealing with physical problems that will enable him to work intelligently with questions of this character as they may arise in connection with processes in the arts.—*Engineering Record*.

A large proportion of the vessels used for towing purposes on this side of the Atlantic have, in the past, been paddle propelled, but there is a fast growing tendency to use the screw propeller, not only on ocean-going tugs, for which it is essential, but for towing purposes in more or less sheltered waters. **Screw Propellers for Tugs.** Twin screw tugs of large power are more convenient because of their breadth, being less than that of paddle tugs, and though they have some disadvantages, such as the possibility of fouling screws with a loose tow rope, and rather inferior manœuvring qualities, these are more than set off by the advantages they offer. With screw tugs a difficulty arises at once in the design of propeller to be adopted, for it is obvious that the problems of towing and running free differ considerably; in fact, it may be said that there are three conditions of service for a tug-boat, all of which have to be taken into account in designing her propellers. She must have good speed when running free, because it is often essential to be able to reach a prospective tow more quickly than a rival vessel, in order to obtain the work; she must have good speed when towing, and she must be able to exert a considerable pulling effort when assisting to berth a large vessel at any time when she has practically no speed at all through the water. Fulfilment of the first of these conditions is generally assured by the provision which has necessarily to be made for the second, because towing is after all the principal business of a tug, and she is given power for this purpose which will drive her at a relatively high speed when fully opened out and running free. Similarly the power available for pulling or pushing, at little or no speed, is dependent usually on the provision made for actual towing, and is therefore left to take care of itself. The question then becomes, what is the best form and proportion of propeller to enable a tug to tow at high speed, for if that is attained then the others, as we have shown, follow.

It has been common practice to use four-bladed propellers of large area, having broad tips, with a view to reducing slip as much as possible when towing, the pitch ratio often being large, and the engines being comparatively slow running, but there has been very little information available

to confirm or refute the correctness of this procedure for the purpose intended. There is now published in the *Transactions* of the Society of Naval Architects and Marine Engineers of America a paper by Professor C. H. Peabody, dealing with an instructive series of experiments on all these points, carried out with two self-propelled models of tow boats. These models, the *Froude* and the *Fulton*, were respectively 37.6 feet long, 6.4 feet broad, with 8 tons displacement, and 30.9 feet long, 7 feet beam, with 9.6 tons displacement; they were thus large enough to give reliable experimental results in the capable hands of the staff of the Massachusetts Institute of Technology. It is unnecessary to go into details of the tests, except to note that the plotted results given show that the methods adopted were quite sound; from them Professor Peabody has come to the conclusion that it is unnecessary in any tug-boat propeller to adopt a projected area ratio of .5 with four blades, and he argues that the efficiency will be better if the blade tips are of a plain oval shape than if they are abnormally broad; this seems quite a reasonable deduction from the results of his experiments if the conditions of draught allow of a sufficient diameter being used. Experiments on these models were made with various proportions of screws, and though it is not specifically stated, it may be presumed that diameter was constant throughout, the variables being pitch ratio, and projected area ratio. The diameter used was not so large, however, as would give the best results, and the models were each driven by a single screw, a fact which must be borne in mind when applying the deductions to twin-screw propellers. Taking the *Froude* first, the experiments when running free brought out the fact that variation in blade area, within limits, made little or no difference to efficiency, and this was practically the same when towing, with perhaps a slight advantage in favor of the narrow blade with a high pitch ratio. For pitch ratios of .8 and 1.1, when the tow was heavy enough to reduce the speed at full power to .6 of that attained when the boat was running free, the powers for the same speed were about equal, but for a pitch ratio of 1.5 the power was very much increased, but this is possibly partly due to proximity of the screw to the stern post in this case. When pulling or pushing with no speed through the water the pull was greatest for the smallest pitch ratio, and smallest for the greatest pitch ratio for the same power. This is very interesting, for it shows that where speed through the water is reduced or entirely eliminated the low efficiency usually associated with a low pitch ratio when running free is more than counterbalanced by the effect of the additional revolutions required, this causing the propeller of low pitch ratio to act on more water than that of larger pitch ratio, and so to obtain an increased thrust for the same power transmitted. Similar experiments were made last year with the *Fulton*, the tow in this case being the hull of the *Froude*, with its resistance augmented by a plank bolted across the stern, whereas the tow used by the *Froude* in the previous

experiments was a triangular drag made up of railroad sleepers towed apex forward. The kind of tow makes little or no difference to the results, which are in each case comparative. The *Fulton* was tried with three different propellers, all presumably of the same diameter, and approximately the same projected area ratio, *i. e.*, .45, the pitch ratios being .8, 1.0, and 1.29. When running free the poor efficiency attributable to low pitch ratios was clearly evident, thus at a constant speed of 6.5 knots the brake horse-powers necessary for pitch ratios of .8, 1.0, 1.29 were respectively 11.5, 10.9, and 10.7, an increase of power of  $7\frac{1}{2}$  per cent. for the low pitch ratios over the highest. When towing at full power with a tow sufficient to reduce the speed to .6 of that when running free at the same power this disadvantage of the low pitch ratio disappeared, and there was shown a small advantage for the smallest pitch ratio, thus confirming the previous experiments on the *Froude*. No experiments were made to show whether this comparison would be maintained with an increased drag and a less speed for the same power, but in all probability it would, for the same features were exhibited by the screws when the vessel was made to pull against the tension of a rope, moored to a fixed point, the pull being measured when there was no speed through the water; thus on the *Froude* at 7 brake horse-power for pitch ratios of .8, 1.1, and 1.5 the pulls were respectively 400 pounds, 350 pounds, and 300 pounds, and on the *Fulton* at 11 brake horse-power for pitch ratios of .8, 1.0, and 1.29, the respective pulls were 560 pounds, 545 pounds, and 490 pounds, thus showing in each case the advantage of the high revolutions demanded by the low pitch ratios. It thus appears that so far as these experiments go they show that the best shape of blade is the elliptical one, the best pitch ratio for all purposes on a tug is about 1.0 or a little more, and that the projected area ratio need not be more than .5 for screws of reasonable diameter, though this last factor is not one which is likely to vary the efficiency of propulsion to a serious extent unless a smaller area be used.

Experiments were also made to find the effect of the wake of the screws upon the resistance of the tow, and the reasonableness of the common practice of using a long tow rope was established; there was a gain of 10 per cent. in speed by lengthening the tow line from twice the length of the *Fulton* to six and a-half times the length. In a seaway the tow line is usually about six or seven lengths of the towing vessel for, for other reasons than the wake effect the tow is much easier when the line is long and elastic. Old skippers sometimes sling a piece of heavy chain in the middle of the tow line for towing at sea in rough weather and find the suspended weight to be an efficient method of increasing the elasticity of the line. In smooth water the best method of towing is alongside; experiments made in this way showed an advantage of from 10 per cent. to 12 per cent. in power when towing alongside as compared with towing on a line of three lengths. This also is very interesting as confirming the results

of practical experience, which has made it the usual procedure to tow alongside when possible, and when it is necessary to tow on a line, to use as long a line as can reasonably be done.—*The Engineer*, London, February 14, 1913.

The establishment of the Pratt School of Naval Architecture and Marine Engineering is assured to the Massachusetts Institute of Technology by the decision of the jury to whom the Supreme Court School of Naval Architecture had given certain questions to decide. The official pronouncement of the decision by the court is yet to be made, however. The gift, which is three-quarters of a million, is practically out of the clear sky, for neither President Maclaurin nor Prof. C. H. Peabody, head of the present department of naval architecture, had real acquaintance with Mr. Pratt.

The department of the Institute of Technology that has been so magnificently endowed is one that has met with appreciation everywhere. Every naval constructor who graduates from Annapolis is required by law to go to Technology for its courses, while the foreign nations who are learning the art of making and using navies, like China and Japan, send scores of their young men to the Institute, many of whom enter this department. At the present moment there are attending Technology thirty-six Chinese and two Japanese. Recently Mr. Theodore N. Vail communicated to President Maclaurin the fact that Mr. Denny, partner in a large shipbuilding firm at Dumbarton, Scotland, had sent his son to Technology. Mr. Denny is enthusiastic about "early schooling in England or Scotland, but technical education in American institutions."

The Pratt Fund will enable Technology to extend the work of research, for which it is celebrated among naval men, and it is not unlikely that one item of equipment will be a mammoth towing tank. This will supplement the observations out of doors in the Charles River Basin. Here, through moneys contributed by the late Dr. Weld, the fine observations with the *Froude* were made, in which the little boat taught the bigger ones that the propellers were in the wrong place, and in the last season the work with the *Fulton*, which has given to constructors of towboats some principles not before well established. The Pratt Fund may well afford to the school the means of undertaking most important matters and replace present rule-of-thumb by scientific demonstration.—*The Naval and Military Record and Royal Dockyard Gazette*, London, Eng.

The person who glances over the list of graduation theses of a college or university commencement seldom has his interest greatly excited, unless, indeed, he may be a specialist and happen to strike the page that comes within his ken. But at the graduation exercises of Technology, even those who were obliged to stand during the exercises were struck with the familiar words in the titles of the essays and

**Tech Education  
at Work**



researches that were an essential part of graduation. It was possible to select only a few abstracts for presentation as readings, and these were exceedingly striking in their application to the progressive life of the twentieth century in this country.

Aeronautics appears twice in the list of titles and properly so, since the Institute established a dozen years ago a modest plant for furnishing currents of air under various kinds of control at different velocities, and has seriously thought at times of increasing the magnitude of the plant. But here such an institution may very well pause a moment before plunging into the matter, for to furnish a current of air from a conduit six feet square and with velocities up to, say sixty miles an hour, approximating the not unusual conditions of nature, would require a couple of hundred horse-power and an outlay of some thousands or tens of thousands for the plant.

But with the apparatus that is on hand many important investigations have been made and the present year one of the theses has been devoted to determining the center of pressure of aeroplane surfaces, enormously important for the aeronaut to know, yet hardly even to be guessed at. The second of the aeronautical investigations was by a western man who set out to determine the pressure ahead of the planes of the machine.

The principle that was used in this work has its first application to air work by the student in physics to whom it occurred. As the wings of the aeroplane encounter the air they naturally produce in it some measure of compression. Physicists know what a measure of the compression of transparent substances may be made by passing light through the substance. Certain rings of color, termed interference rings, appear when there is compression, and by a specially constructed interferometer, as scientists name the instrument that is used in such measurements, the amount of compression may be determined. So the young men who had this investigation in hand worked at different parts of the aeroplane, determining by interference observations what were the different pressures of the air at different places under differing circumstances.

#### IMPROVING THE AUTOMOBILE

The automobile has also been an important subject from the fact that it is so popular and the manufacturers seek in all kinds of ways to make their individual product more acceptable to the people. A year ago there were tests on various kinds of engines and one of the students brought his own automobile to the laboratory, dismounted the engine and proceeded to get at its efficiency. This year the two principal theses were one of them a testing of the brake bands of such vehicles, a most important feature since upon this ribbon of metal there may at times hang human life, while the other was a trial at an automatic truck tire testing machine.



The life of the tire of a heavy truck is more important than one would imagine at first thought, the cost of repairs and renewals amounting to perhaps two to three cents a mile and the standardization of them has not yet been accomplished in a way that is satisfactory to every one, so that anything that will lead towards easy and proper means of testing and consequent standardization will be a step in the right direction.

The Institute in entering into its third year of testing in a large way the efficiency of motor trucks and every element that is related to the performance of such vehicles is subject to searching and scientific questioning. It is natural therefore that the efficiency of engines should be more or less a subject of interest and inquiry, so there is found in the list of theses one entitled, "The Design and Testing of a 10-Horsepower Gasolene Engine." It is perfectly true that there are other uses for such motors than in the auto, but here is its great field, and the question of fuel is considered in the work of another student, or rather two of them for the larger pieces of work are done together by two or three men, the action of different vaporizers on the performance of kerosene as the fuel of an internal combustion engine. Still another pair of men have taken up the question of whether kerosene may be improved in its work in engines by the injection of water.

Other motive powers are not neglected, for two other students conducted an efficiency test on a six-cylinder Diesel engine, the great 2,500 kilowatt Curtis and Parsons turbine has been tested, there has been a comparison of the Diesel and the steam engine as prime movers for the generation of power in electricity, while the whole subject is taken up in still another thesis, "Power Plant Centralization."

#### NEW PROCESSES DEVELOPED

It is of course understood that in the time which the students can give to their thesis work but a single phase of each question can as a rule be taken up but it is interesting to know that not less than ten per cent. of the researches develop facts or processes that are new and as such are worthy of publication to the technical world. This is a pretty creditable record for young men who are only laying the foundations for their future work. The Tech students have to their credit a few useful inventions, a good many valuable methods and an enormous amount of investigation which is available to him who knows how to get at it in the hundreds of manuscript volumes that the different departments have preserved.

Efficiency is one of the watchwords of the day and it is only natural that technical men should concern themselves a good deal with it in its various aspects. "An Investigation of the Distribution and Losses in a Typical Antiquated Industrial Plant" was the subject which two of the students took up, the testing of a great Pawtucket spinning mill in action was another efficiency study, and a testing of a shop making rivets was a

third. In many cases the invitation comes from a manufacturer for the students to make a test of his shop. For the newest of Boston's department stores four of the students worked up the question of the power requirements, while for a drill manufacturing firm which furnished the wherewithal in material the question of the twist drill was considered. There has been a great revolution in the drill making in later years, and today it has the simple form of a ribbon of metal that is twisted and sharpened at the edges. The young men who undertook the drill research came upon the very interesting facts that more work could be done if the drills were sharpened in a manner that came to them as the result of the experiments, and that the real greatest efficiency of the drill had not heretofore been reached. The boys find that the drills are capable of much more work than the manufacturers have hitherto felt justified in warranting for them. This situation is interesting, for it is not very often that the salesman underrates the performance of the items that he is selling. Along the same kind of investigation there is the fact that even today the best form of gear tooth is not really known. The subject has been under consideration in various theses in the Institute for two or three years, and this year it takes the form of the strength and deflection of the teeth under loads.

#### SOLVING THE SEWAGE PROBLEM

Tech has taken so high a rank in point of the accomplishments of its sanitary engineering and public health men that it is not surprising to find these two allied departments discussing through their students some of the most practical problems of the day. Half a dozen water or sewage systems have been studied by the boys, some of them in relation to the conditions obtaining in their own home towns and others taking strange places for their suggested work. One of the most interesting of these has been a consideration of what is to be done with the sewage of Beverly. This was of such interest that an abstract of it was read at the graduation exercises. Beverly, Danvers and Peabody empty their sewage into practically the same watercourse which flows into Salem harbor. Tests of the water at Beverly, where there is bathing, shows it to be contaminated with sewage and in a condition that should not be permitted to continue. The students suggest the treatment of sewage by means of hypochlorites to kill the bacteria and a filter in which the organic matter will be largely disposed of by oxidation. The same problem has been attacked by the Beverly authorities, but the boys seem to think that their suggestion is the simpler. There has been a suggestion that the present outflow pipe be continued some distance under water and thus deliver the sewage farther out into Salem harbor, but it is found that test floats from the Salem outfall will drift inward and it would be necessary to continue the Beverly outfall a long ways to be assured that its sewage was not flowing back to

pollute its own shores. Here is a practical solution of a live problem. The theses suggest plans for a number of water supplies: Rutland, Vt.; Abington, being here with reference to fire protection; Somerset, Tewksbury, while in addition to the sewage disposal of Beverly plans were worked up by the students for Braintree, Walpole, Marlboro, South Framingham, Haverhill and Hopedale, while kindred problems were taking up the pollution of the Assabet River, and the vexed question of the self-purification of streams, the experimental application being to the Neponset, which in past years has sadly needed some good offices of the kind. Then bathing pools were investigated with reference to their bacterial content and means of purifying.

#### WATERPOWER RESEARCH

Another aspect of the streams in irrigation and in power has been taken up by seniors of the Institute, one of the considerations being the development of a waterpower at Shirley, another experiments on a tidal power at Portsmouth and still a third the suggested method of utilizing a "bore" at St. John, N. B. Here there is a "reversing falls," first flowing one way and then the other, with about five feet head, a constant source of power if the means could be found to utilize it. One of the students of this year with one of last year outlined a plan whereby the constantly acting tidal force could be put to good account. Tests have been made of a Vermont hydro-electric plant already in use and other studies of water have included such practical things as irrigation, the draining of a bog in Guilford, Me., the troubles with standpipes, the real value of cement-lined water pipes and methods of gauging not only streams but the flow of water in and through pipes.

And this is really just the beginning of useful and interesting matters which the students have taken up as part of their work which are added to the world's stock of knowledge. In concrete there are the questions of how to waterproof it, what is the effect of different kinds of sand in it, what is its strength, how can it be made acid-proof, to say nothing of various plans for constructions of dams, bridges, tanks, arches and reservoirs. In building there is the weight of the materials, a very important item with the modern lofty constructions, while paving bricks and the question of a good and suitable pavement for Beacon Street were taken up. In railway construction there are the problems of eliminations of grades, which have some special applications to the home towns of the students working upon them, while three of the considerations have been of various forms of bridges.

#### TOPICS OF SCIENTIFIC INTEREST

Electrical chemistry as well as chemistry itself may be expected to present some problems that are technical and not apparently in close

contact with daily life. Of such nature are the investigations on specific heat, dielectric constants and migration velocity of Ions in fused salts, but in electricity itself there are a good many items of popular interest that these boys have taken up. They comprise such things as the power plant for a New Hampshire hotel, the study of an electric drive in a laundry, a plan for the development of a hydro-electric plant for the Cedar Rapids on the Saint Lawrence River, the electrification of a branch of the Baltimore & Ohio Railroad, and whether an electric installation would be advisable in a manufacturing establishment at Norfolk Downs. Incidental to the production of electricity have been various plans of the architectural students, leading in which is the magnificent suggestion by one of them to beautify the Mississippi at Minneapolis, make a monumental structure in addition to the dam and combine with all a splendid land and water park. Then when the electricity is produced there is the problem how to get it to where it is needed. The question of solid or stranded conductors has been taken up from the efficiency point of view with the result of an opinion that there is not much difference in this respect between the two, while a third thesis has considered transmission towers, which have hitherto been built on general principles without a realization of the nature of the strains to which they are particularly subjected. The chemists have taken up a long list of special topics, one of which, in a problem of drying yarn, has resulted in a suggestion that will save half the heat now used in the process and achieve really better results, while a new method of testing out granulated sugar from mixtures, of getting at the sulphur in vaseline, and of determining the caramel in vanilla extract are among the practical applications.

#### A PUBLIC SERVICE PERFORMED

A group of students has been interested in testing out a new smoke-grading device. The Ringelman charts have come into use the past few years for determining the quality of smoke which the health officials of certain cities and municipalities have deemed injurious to the public, but these do not take into account the contrast or lack of contrast between the smoke and its background. The device that has been tried out makes the comparison a direct one in which the measure of the intensity of the background is one of the factors. Another man has been looking into the conductivity of fire brick, and another making actual tests of the strength of different kinds of wood, glued joints, stresses and strains of materials which come naturally into the field of experiment of a technical student, while leather in one or two of its conditions has been the subject of serious tests. Corrosion of brass, the scaling of boilers, the strength of beams, the quality of steel, have been among the subjects taken up, all of them very practical; and then there are the miners with their array of ores.

This work is quiet and the world in general knows very little of its technique, but here the skilled man has had a rare opportunity. He can grow wealthy, or at least his company can, on a low grade of ore that meant starvation only a few years ago, thanks to cyaniding and other processes. So the theses continually recur to a "low grade of ore," and run the gamut from gold through copper to manganese and down the scale to stibnite.

And then there are the architects, who make such splendid sketches and drawings, working over and over again at the problems, that were trials to the earlier masters, but always in the light of new materials and new methods. Then there are the naval architects, one of whose difficulties is that there is never a straight line or a right angle in any of their constructions. Here the question of ventilation has been taken up this year by a couple of the students, and for the first time reliable data concerning the delivery of air, received by a cowl ventilator, have been figured. And here there comes a tugboat design, the results probably of some of the experiments with the *Fulton*, while one of the Chinese, who is to be, perhaps, a future admiral in the navy, holds forth on the theory and design of lighthouses.—*Boston Transcript*.

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### A Correction

TO THE EDITOR OF THE REVIEW:

On page 379 of the June issue of the *TECHNOLOGY REVIEW*, under the heading "Gift for Naval Research," I note that I am credited with having given \$1,000 for continuing experiments with the boat *Fulton* by the Department of Naval Architecture.

It is unfortunate that this statement has been made, for it is not true. I have not given this amount, but did guarantee to raise subscriptions amounting to \$1,000 for the work. As a matter of fact Mr. Lewis A. Crossett, Mr. Herbert M. Sears, Mr. Frederick C. Fletcher, and another gentleman who does not wish his name to appear, have made subscriptions.

As the statement that I am giving the whole amount does serious injustice to these men, will you kindly correct it in the next issue of the *REVIEW*.

Yours truly,

HENRY A. MORSS.

## PUBLICATIONS OF THE INSTITUTE STAFF

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## BOOK REVIEWS

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THE APPLICATIONS OF LOGIC. By A. T. Robinson, Assistant Professor of English, Massachusetts Institute Technology. New York: Longmans, Green & Co. \$1.20.

It is a platitude beloved of college presidents and other official optimists over our educational situation, that one of the chief benefits to be derived from a college training consists in the acquisition of the power to think competently for one's self. To develop such a power should assuredly be the primary intellectual aim of the colleges. Yet surprisingly little is, as a rule, done to adjust educational means directly and intelligently to this end. We pour upon our undergraduates vast masses of historical, linguistic, and scientific information, some part of which we require them, under the plan of term-examinations, to retain for a few months—and no longer; we do something, probably, to improve taste and cultivate the power of enjoying literature; and we bestow enormous pains, though for the most part with disappointing results, in an attempt to impart some rudiments of the art of writing English. But we concern ourselves with the art of thinking in a much more casual manner. The freshmen, however much distracted by the noisy sideshows of the campus, can hardly avoid recognizing that he has a great many facts to "learn," and that he is also expected to acquire and exhibit—when dealing with his English instructors—a certain degree of correctness and skill in the use of his own language. But it is questionable whether he so generally and clearly understands that his business also is to learn to think in a critical, orderly, and workman-like fashion, to acquire correctness and skill in the use of his own reason.

Courses in English composition usually give some training of this sort, but they give too little and they are often preoccupied more with rhetoric than with logic. Courses in formal logic should have for their principal function the production of a *habit* of analytical thinking and of intellectual circumspection; but as usually given, they are encumbered with scholastic baggage, and are far too brief to produce the effect of habituation in which lies their potential usefulness. Other courses, in languages, in natural science, and especially in economics, give a good deal of valuable exercise in methodical and self-critical thinking; but they give this essentially as a by-product. The present reaction against the doctrine of "formal discipline" leads some teachers to suppose that training in careful and correct thinking comes best as a by-product. But it would be easy to show that this conclusion is a mistaken inference from a true premise. Not the teaching of logic, indeed, but the cultivation of logicity, should be *both* a by-product of most other courses of collegiate study and also the object directly aimed at in no inconsiderable part of the student's work.

Mr. Robinson's little book is significant as a sign of a growing appreciation of all this; and it is likely to render genuine service towards bringing about a change of emphasis in English courses for freshmen from rhetoric to logic, from the problems of expression to the problems of actual truth and consistency. Though the book at a number of points is open to criticism, and needs supplementation from other sources, as a whole it should have upon the beginning undergraduate the extremely

valuable effect of awakening his logical selfconsciousness, of giving him a good general notion of what "a logical habit of mind" means, and of stimulating in him some desire to acquire skill in the art of thinking, and perhaps even some capacity for feeling shame when he exhibits ineptitude in that art. The book contains a large amount of material, usually well selected, for "exercises" in the analysis of arguments and expositions. In these not the least part of its usefulness should consist; for, just because training in the application of logic is chiefly a process of habit-forming, its two principal methods should be the constant critical analysis of arguments of all sorts—arguments which people have actually used, on subjects pertinent to the student's other studies or to his everyday interests—and the frequent and long-continued production by the student of original written exercises in proof, inference, and the analysis of problems, which exercises are thereafter subjected to searching critical analysis in conference between student and instructor. It may be added that Mr. Robinson's book is not least logical in reminding the student of the subject that logic has its limits.—*The Evening Post*, New York.

**DIAGRAMS FOR THE SOLUTION OF THE KUTTER AND BAZIN FORMULÆ FOR THE FLOW OF WATER.** By Karl R. Kennison, '08, Grosvenor Building, Providence, R. I. Pamphlet, 8½ x 11 in., 2 pages and 2 diagrams. \$1.00 net.

The inconveniences connected with the use of the usual type of diagrams for the Kutter formula have led the author to make a rearrangement of the various curves. In so doing he has succeeded in producing a diagram which may be read without the help of a straight edge or needle. This is a very important improvement, as it is not necessary to lay the diagram on a table. The curves are drawn on a network of horizontal and vertical lines, spaced so as to allow precise readings. Another advantage, but of minor importance, is that the values can be directly read in the metric system as well as in the duo-decimal. The two pages fully explain how to use the diagrams and the meaning of the various letters. The author has found it advisable to introduce a factor,  $S-1000s$ , where  $s$  is the usual value found in the formulæ. A way is also indicated whereby these diagrams may be used to eliminate the tedious calculations in determining the "back flowage" from a dam.—*Engineering Record*.

**RAILROADS: RATES AND REGULATION.** By William Z. Ripley, '90, New York; Longmans, Green & Co., \$3.00.

Dr. Ripley is professor of economics in Harvard University. His first chapter is a historical survey of the development of railways in the United States, and that chapter forms an essay of human interest to the general reader. The ensuing chapters of this scholarly and comprehensive volume are devoted to an accurate and expert study of the economic and social evils which have grown up around our great railway system and the legislation which has been devised to correct these evils. The volume is not written in advocacy of any "ism," but is a product of the scientific and historic spirit—the spirit defined by Dr. Ripley in his preface in words which are worth quoting:

"An earnest effort has been made to set down the facts concerning this highly controversial subject with scientific rigor and with fairness to all three of the great parties concerned, the owners, the shippers, and the people. If bias there be, it

will in all likelihood be found to favor the welfare of the 'dim, inarticulate multitude'—that so inert mass of interests, and aspirations too indefinitely informed as to details and too much occupied in earning its daily bread to be able to analyze its own vital concerns, to give expression to its will, and even sometimes, as it seems, wisely to choose its spokesmen and representatives. It is this helpless and unorganized public, always in need of an advocate, which perhaps most strongly appeals to the academic mind. If there be lack of judicial poise in this regard, it is, at all events, palliated by free confession in advance."

These words express, it seems to us, the attitude that should be assumed by all good citizens—editors, lawyers, legislators, or railway managers—in considering the intricate problems involved in the relation of the railways to the government.  
!—*The Outlook*.

## NEWS FROM THE CLASSES

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1868.

ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

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The secretary was invited by Arthur Winslow, '81, to take an automobile ride down to Rock, Massachusetts. While there he inspected the starting of the buds on the fruit trees, the planting of potatoes, and took a paddle on the beautiful lakes that are in front of Winslow's home. He found he could still wiggle a paddle and keep the bow of the canoe up into the wind all right. He got a good sun burn and profited immensely by the trip. Towards the end of April he took a professional trip to Virginia to advise in regard to a concentrating proposition. Mrs. Richards accompanied him as far as Washington where she visited cousins and then joined him on his return home. Later they went up to their camp at Randolph, N. H., for the last week of May and did a little planting in the garden preparatory to the longer stay which they will take beginning June 14 and ending probably September 15. Professional business will probably call the secretary to Denver for the last of July and first of August.—E. C. Appleton is now in the South, where he is planning, since his retirement from active railroad service, to take up agricultural work. His address is care of A. B. Hart, MacClenny, Florida.—The class of '68 held its dinner at the Union Club, June 10 and they were joined by some of the class of '69 and of the class of '70. They had the honor of having with them their wives and daughters: Mrs. Bowditch, Mrs. Tolman, Mrs. Stone and her daughter, Mrs. Wright, Mrs. Richards, and Miss Porter, a niece of Mrs. Rogers. After a pleasant meeting discussing old times they went to the Potlatch at Mechanics Hall. Those attending the dinner were, J. P. Tolman, W. E. Stone, Eben S. Stevens, Eli Forbes, D. M. Wheeler, A. H. Russell and R. H. Richards of '68; E. S. Safford, E. W. Bowditch, G. T. Tilden, Channing Whittaker, C. B. Fillebrown and H. A. Carson, '69; C. R. Cross, '70.

1875.

EDWARD A. W. HAMMATT, *Sec.*, 15 Water Street, Newton Center, Mass.

From the *Boston Herald* of June 22:

Three Boston men have started West to join the Polar expedition started by Samuel Mixter, Harvard, '12, son of Samuel J. Mixter. The new members of the party are Eben S. Draper, Jr., George S. Silsbee and John Heard, Jr. They will go to Nome, Alaska, where they will join the original party consisting of Mixter, Dunbar, Lockwood, W. Sprague Brooks of Milton, who represents the museum of comparative zoölogy at Harvard; Joseph Dixon of Berkeley, Cal.; Capt. Louis Lane of the *Polar Bear*, and W. E. Hudson, a newspaper photographer of Seattle.

From Nome the party plans to go to Wrangle Island, which is well within the Arctic circle of Siberia. They will collect specimens there and possibly also on the

northern Siberia coast, returning by way of the Pribilof Islands, where the United States government has a seal station, and where the exploring party has a permit to land. Thence they will go to the Alaskan peninsula, where they will hunt polar bear and walrus until the return trip. They expect to reach Boston in October. The photographer has a motion picture equipment, including over 15,000 feet of film and 1,000 photograph plates. Mr. Dixon is the representative of John Thayer of Lancaster, the noted amateur ornithologist, and will make a specialty of collecting birds.

The expedition is being made in the auxiliary power schooner *Polar Bear*, the skipper of which, Capt. Lane has been a navigator, trader and explorer in the North for several years. The first part of the expedition included a visit to Kamchatka, where the party went especially in search of birds and little known varieties of mountain sheep and bear. Mr. Lockwood is well known as an amateur big game hunter and sportsman, and the Mixer home is filled with interesting trophies secured by Mr. Mixer and his three sons.

1876.

JOHN R. FREEMAN, *Sec.*, Grosvenor Building, Providence, R. I.

A notable compliment has been paid to Prof. W. O. Crosby of the class of '76, formerly head of the department of geology at the Institute, in the presentation by his friends and former students of the gift of \$1,800 to the trustees of Columbia University in the city of New York, to be applied to the purchase and maintenance of a collection of geological lantern slides for the use of the department of geology, to be known as the William Otis Crosby Collection, in recognition of his many notable contributions to geologic science. Prof. Douglas W. Johnson of Columbia, formerly a student of Professor Crosby's at the Institute, was active in the matter of procuring this collection for Columbia and many of Crosby's old friends and former students were grateful for the opportunity to thus express their appreciation of the thoughtful work and kindly character of the man and the stimulus for original research with which he inspired many of his students.

1877

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

It is announced that the Pennsylvania Steel Company at Steelton, Pa., and the Maryland Steel Company are proposing to expend \$10,000,000 in extensions and improvements during the present year. F. W. Wood, president of the Maryland Steel Company, will have the matter in charge for his company.—Prof. George F. Swain has been chosen chairman of the Boston Transit Commission to succeed Mr. Crocker, deceased. The selection is entirely fitting owing to his long experience and excellent judgment in connection with the Board. It is an honor to the class of '77 and the Institute to have his ability thus recognized. The following in regard to his work is from the *Boston Transcript*:

In the taking of the tenth United States census in 1880-1884 he was the hydraulic expert. He came to the Institute of Technology in 1887, and remained the Hayward professor of civil engineering until 1909, when he became professor of civil

engineering in the Graduate School of Applied Science at Harvard. In 1887 he became the consulting engineer of the Boston Transit Commission and continued as such up to the time of his appointment to the commission. Professor Swain has been a member of many commissions and the engineer for numerous structures of importance. Three years ago he made an appraisal of the assets and liabilities of the New York, New Haven & Hartford Railroad for the State Commission. He is a fellow of the American Academy of Arts and Sciences, has a membership in the American Society of Civil Engineers, American Society of Mechanical Engineers, the Boston Society of Civil Engineers, the Institute of Civil Engineers of Great Britain, the American Railway Engineering Association, the Association of Superintendents of Bridges and Buildings, the American Railway Engineering Association, the New England Water Works Association, the New England Railway Club, the American Forestry Association, the Massachusetts Highway Association, the Society of Engineers in Hanover, Germany; the Society for the Promotion of Engineering Education and the International Society for Testing Materials. He belongs to the St. Botolph, Commercial, Colonial and Union Clubs.

#### GEORGE A. NELSON

The secretary regrets to report the death of George A. Nelson, which occurred at the Lowell General Hospital, June 3, after an illness of several months' duration.

The following sketch of his life is taken from the *Lowell Courier Citizen*:

George A. Nelson, assistant city engineer for 30 years, died yesterday at the Lowell General Hospital, after an illness covering several months' duration. His age was 55 years. The cause of death was kidney trouble, superinduced by extreme nervousness.

The passing of this city official removes one of the most capable men ever employed by the city. Conscientiousness to the point of a fault, nearly, characterized him. He loved his work, and it was the mainspring of his life. He was very susceptible to political changes, which have, at times, seriously affected the office of city engineer, and was always striving to render a higher standard of efficiency.

His first work of any considerable importance was for the Pacific Mills of Lawrence. He was there some time when the city of Lowell decided to erect a stone arch bridge on Taylor, or what is now known as Rogers street. An expert in graphical statics was desired and it finally became known here that George A. Nelson, then in Lawrence, was the man best qualified for the work. Overtures were made to him and, after a time, he came here. His plans and specifications were followed throughout. The result of this is apparent today, for the bridge in question is one of the stoutest in the city. The local city government was so well pleased with Mr. Nelson's work that he was offered a permanent position as assistant city engineer. He was young then and the position was only taken as a stepping stone to something better.

All of these years he worked for a comparative stipend, for one so endowed with great talents and experience, when he might have gone to the larger cities and have earned more. He was offered a position by the construction company putting in the water system of New York City, with a salary to begin with much in excess of his Lowell salary. Later he was offered a responsible position with increased salary as a technical engineer for the New York Central station, only recently completed, which he declined.

Incidental to his work he became greatly interested in photography and followed it with zeal. So thoroughly competent did he become that he received medals at international exhibitions, one of these being at the International Salon held in Berlin, Germany.

Mr. Nelson took practically all of the official photographs for the city, of bridges, roads, water works machinery, etc., and many of them are framed at the city hall, while others have found their way into annual reports and into magazines.

He was a member of the American Society of Civil Engineers, of the Boston

Society of Engineers, and of the Merrimack Valley Alumni Association of the Massachusetts Institute of Technology, of which organization he had been president.

The funeral occurred at the homestead in Lincoln and was attended by many of his classmates and friends.

1878.

E. P. COLLIER, *Sec.*, 274 Summer Street, Boston, Mass.

The class of '78 was the guest of J. W. Rollins on the evening of June 10. Fourteen of the class, namely Baker, Bradford, Collier, Eaton, Higgins, Longfellow, Rackemann, Robertson, Rollins, Sargent, Sawin, Schwamb, Williams, and Woolworth, met at Rollins' office and were conveyed in automobiles to the Country Club, in Brookline, where the class sat down at dinner and for about two hours spent the time in sociability. This class has never gone very extensively into stunts, the principal object of their reunions being to get together and renew old friendships and call back the days of 1874 to 1878 and discuss matters which are now interesting to every one who has ever been connected with the Institute, namely, the welfare of the school and its possibilities in the future in the new home which it is going to occupy. After the dinner, the party motored to Mechanics Hall, where a large table had been reserved for them, from the center of which rose a staff bearing the Technology colors with the class number on it. The exercises at the hall were enjoyed thoroughly and the class stayed it out until the last. For a class which entered with a membership of forty-four, and whose members are scattered all over the United States, fourteen seems to be a very good percentage to get together.—C. S. Rackemann has invited the class to be his guests at another reunion to be held on his estate in Milton in September.

1880.

GEORGE H. BARTON, *Sec.*, 16 Lexington Avenue, Cambridge, Mass.

The *Cambridge Tribune* of May 10 printed the following account of the celebration of the twenty-fifth anniversary of George H. Barton's connection with the Teachers' School of Science:

"The annual social reunion of the Teachers' School of Science at the Hotel Brunswick last evening was also the twenty-fifth anniversary of Prof. George H. Barton, as director.

Professor Barton was well qualified by education and experience to take up the work of the school. He was a graduate of Technology in 1880 and remained as assistant during the next two years, going then to the Hawaiian Islands for three years' work on the governmental survey. Returning to Boston he was assistant and then assistant professor of geology at the Institute, spending between the two appointments a number of years under the United States Geological Survey in special investigation in Massachusetts.



From the very beginning his work was essentially that of the geology of Massachusetts. His thesis was a consideration of the geology of the Norfolk Basin, lying to the south of Boston, in which he was able to discover fossils and thereby to determine for the first time its geological age. Under the government he visited every town in the state and climbed every hill. He gained in this way a familiarity with the surface features of Massachusetts not possessed by any other living individual. This, in addition to the special study he gave to the vicinity of Boston and the country about his home in Sudbury, furnished to him the kind of capital that the Teachers' School of Science needed for its field work, and coming so soon thereafter—in 1902—to be its curator, he has been able to direct its fortunes along the most practical lines. He is an admirable lecturer, skilled in explanation and illustration and even more at home in the country that tells the geological story. It has been this rare combination, backed by the sound sense of President Lowell, the trustee of the Lowell Institute, that has shaped the course of the school in such admirable lines.

Noted educators paid tribute to him and his successful work in the school. President Maclaurin sketched the close relationship between Technology and the Teachers' School of Science, adding:

'The most important contribution to the practical success of the school, due to Technology, is the giving to it of a director like Professor Barton. He is a Technology product who has done a great work quietly and unostentatiously and has thereby gained the respect of all interested in the advance of instruction in science.'

Technology marked an epoch in educational history by introducing the laboratory method into every corner of its field of operations and the Teachers' School of Science did similar work by emphasizing the importance of taking students direct to nature. This emphasis on field work, this insistence on taking the teachers out into the open and encouraging them to study botany from the flowers and trees, and geology from the rocks and rivers has given to the teachers of Massachusetts for a generation an opportunity that few others have enjoyed and it is hard to overestimate its value to the generations that are to follow.'

The sensation of the evening was when Dean James Hardy Ropes, of Harvard, took the floor and with a brief résumé of the good qualities of Director Barton presented to him gifts from the graduates of the school to the value of about \$500. First, there was a gold watch with a heavy chain, the charm being an appropriate one for a geologist, since it was a neatly curled-up Trilobite. This specimen was collected more than fifty years ago at Lebanon, Ohio, by the veteran geologist, Denton, whose family took pleasure in mounting the fossil for the occasion. There was a bulky

purse of gold, eagles and double-eagles, and last a little vellum volume, a memorial of the occasion, containing the names of those who joined in the fund for the gifts."

1882.

WALTER BRADLEE SNOW, *Sec.*, 170 Summer Street, Boston, Mass.

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Walter B. Snow sailed for Europe on April 26 with the purpose of ultimately joining the party of the American Society of Mechanical Engineers which is to be entertained by the German engineers during the early summer. Sailing on the same boat were Miss Clara P. Ames with a small party which she is conducting; Miss Walker, sister of A. W.; and Miss Henck, daughter of the late Prof. J. B. Henck, once head of the department of civil engineering at the Institute.

1884.

HARRY W. TYLER, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

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The annual dinner of the class of '84 was held at the new Engineers Club on Thursday evening, April 24, the following twelve members of the class attending: C. B. Appleton, H. D. Bennett, D. L. Coburn, S. S. Dearborn, A. O. Doane, A. H. Gill, E. D. Mellen, H. F. Otis, A. S. Pratt, W. L. Puffer, F. M. Stuart, H. W. Tyler. Plans for an outing on the thirtieth anniversary of graduation in June, 1914, were actively discussed. The pleasure of the occasion was largely due to letters sent in by many of the members who were unable to attend.—The secretary hopes that all members of the class, particularly any who may have received recent communications from Gill, will duly appreciate the honorable position of '84 in the proportion of its members who have contributed to the present Alumni Fund. With 81 per cent. credited to us, and with du Pont's earlier gift for the site, we have every reason to congratulate ourselves.—It was reported not long since that Bonillas was on his way to Washington to urge the annexation of the State of Sonora. There is, however, no confirmation of this rumor.—The secretary has recently been elected chairman of the Faculty in succession to Professor Dewey.

1885.

I. W. LITCHFIELD, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

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The annual dinner of the class was held at the Winter Place Tavern, Boston, on the Saturday evening before Easter as usual. This year the date was March 22. Seventeen members of the class were present; unfortunately a number of the members were out of town on that date. The dinner was an unusually good one and the banquet suite at the Tavern was particularly comfortable and attractive.

After dinner President Spalding spoke of the many things that had been accomplished by the various members of the class during the past year and the honors that had been heaped upon them. In particular he referred to the election of Everett Morss as a life member of the Corporation and of Frank Rand as assistant treasurer of the Institute. He stated that it would be rather unfair to these gentlemen to call on them for speeches, he therefore asked for volunteers to speak for them. Dick Pierce rose in behalf of Morss and after a few well chosen words and pithy illusions by way of introduction, he proceeded to reveal things about the Institute, (in the first person, representing Mr. Morss,) that were extremely interesting and some of them quite startling. Inasmuch as this was a privileged communication, the reporter does not feel at liberty to present the inside matters relating to the Corporation or of the executive committee disclosed by Morss through his spokesman. Litchfield responded modestly for Rand and made some confessions in his behalf that seemed necessary.

Those present at the dinner were: Ames, Bartlett, Brown, Eaton, Hunt, Jim Kimball, Litchfield, Morss, Nye, Osgood, Page, Dick Pierce, Plaisted, Rand, Rawson, Steele, and Spalding.

Frank Page of Springfield was elected president for the ensuing year.

Announcement has been received from Homer stating that the firm of Clark, Howe & Homer has been dissolved by mutual agreement of the partners and Homer had opened offices for the general practice of architecture at 87 Weybosset Street, Providence and 20 Bellvue Avenue, Newport. The only suggestion to be made in connection with Homer's new move is that he might have moved one house further on or this way, in Providence.—Talbot sailed the latter part of June for Europe where he will spend the summer. Talbot is chairman of the C. M. Warren Committee of the American Academy of Science and Arts. This committee is in charge of a fund bequeathed by Mr. Warren for encouragement and research in the science of chemistry.—Nye has been laid up with inflammatory rheumatism at his home in New Bedford and was not able to attend the Potlatch, June 10.—John A. Spalding, former mayor of Nashua, N. H., and father of Billy Spalding, died in that city May 22, following a stroke of paralysis at the age of 76 years. For thirty-two years he was cashier of the First National Bank of Nashua, resigning to become vice-president. He had served in both branches of the State Legislature, was mayor of Nashua in 1885, and chairman of the Republican State Central Committee in 1896. He was a presidential elector on the Garfield and Arthur ticket, and went as a delegate to the national convention which nominated McKinley. The latter appointed him postmaster in 1898, in which office he had since served.—The class of '85 was well represented at the Potlatch Chantant held at the Mechanics Fair Building, June 10.

1886

ARTHUR GRAHAM ROBBINS, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

From the *Albany Knickerbocker Press*, of May 7, we learn of the appointment of George A. Ricker of Buffalo as first deputy of the State Highway Department:

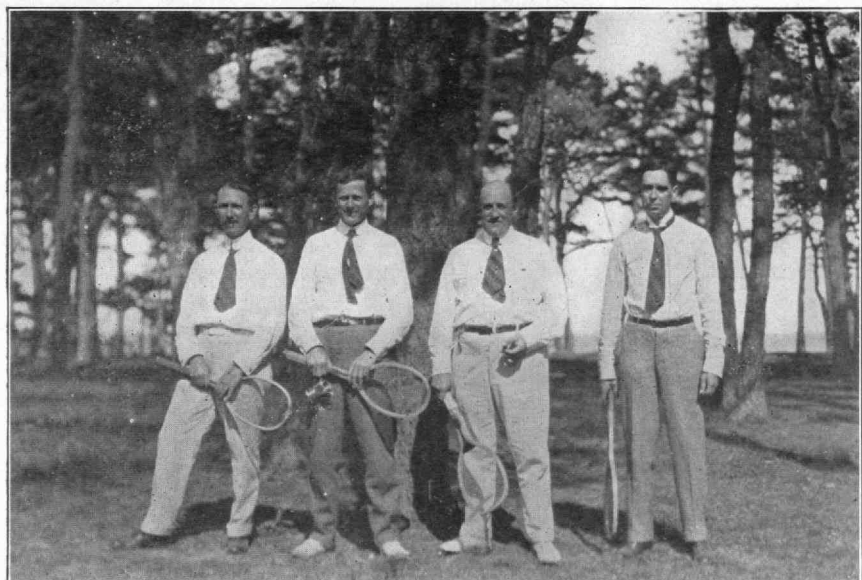
Mr. Ricker has been engaged in a great variety of engineering enterprises, among which are planning and constructing residence sections, many large parks and several cemeteries, including building of the roads and construction of all features of sanitation. The railway facilities, docks and foundations of the great iron plant of the Buffalo Union Furnace Company have all been made under his direction for the last fifteen years. He also had charge of the construction of the two largest and most recently built reinforced concrete grain elevators in the city. Much of his practice has been outside of Buffalo. In Colorado he had charge of the construction of a great reservoir for impounding waters in an extensive irrigation enterprise. In Pennsylvania he was for some time acting chief engineer of a 300-mile steam railroad. In southern New York he acted as consulting engineer of the Western New York and Pennsylvania Traction Company in the building of electric lines to Olean, Salamanca and Bradford. In 1890 he built the electric line from Buffalo to Depew and has been engaged in the effort to extend that road to Rochester.

Perhaps his most conspicuous achievement is the building of the Niagara Gorge Railroad, one of the most difficult pieces of engineering work in this part of the world. The surveys for this road were made in 1890 and the construction was completed in 1896, since which time Mr. Ricker has acted as consulting engineer for the Gorge Railroad Company. Mr. Ricker designed and built the handsome concrete highway bridge in the village of Le Roy over the Owatka River. He laid out the Kenilworth race track, one of the speediest tracks ever built in the country.

1887.

EDWARD G. THOMAS, *Sec.*, Kewanee, Ill.

Henry F. Stoddard died on March 18, 1913, at his home in Welland, Ont. For a year previous he had been in poor health and some months ago he underwent an operation for stomach trouble. This resulted in temporary relief, but he was unable to completely resume his work and gradually failed in strength till the end. Stoddard was born in Plymouth, Mass., in 1865; married in 1894, Miss Frances L. Turner of Brooklyn, N. Y., who survives him with two daughters, Rose and Caroline. He was one of the few men of the class, who have spent practically all their professional life in active work in a single industry. His first work after graduation was that of assistant superintendent of a cordage factory and at the time of his death he was general manager of the plant of the Plymouth Cordage Company at Welland, Ont., the largest plant in Canada making rope, and was noted as a faithful, energetic and competent man. While not a Canadian citizen, he held many appointive offices in Welland, such as park commissioner, president of the Agricultural Society, vice-president of the Board of Trade, chairman of the Building and House Committees of the Welland Club, etc. Stoddard was of a most kindly nature, a cordial and sincere friend, loved and respected alike by his business associates and employees.—I have also to record the



Class of '88

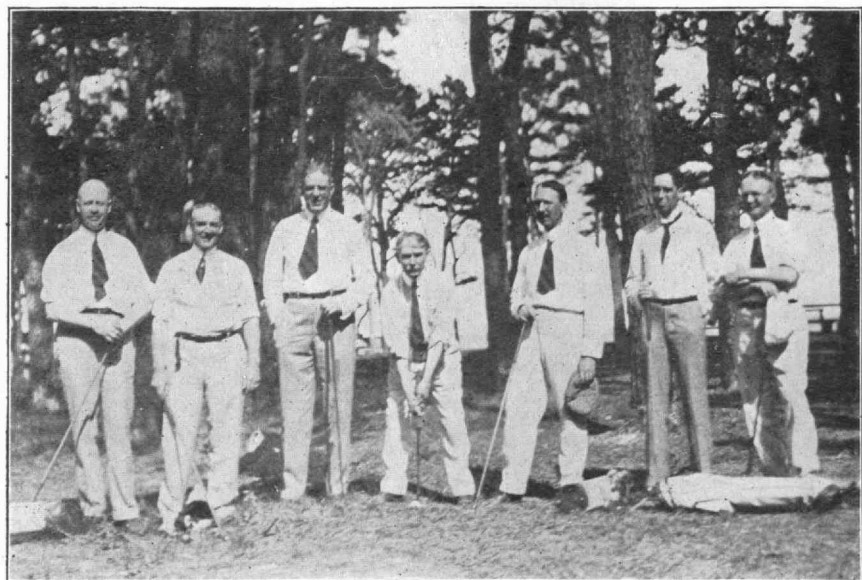
# THE TENNIS PLAYERS

Snow

Shaw

Bradlee

Jordan



Class of '88

# THE GOLFERS

Collins

Blanchard

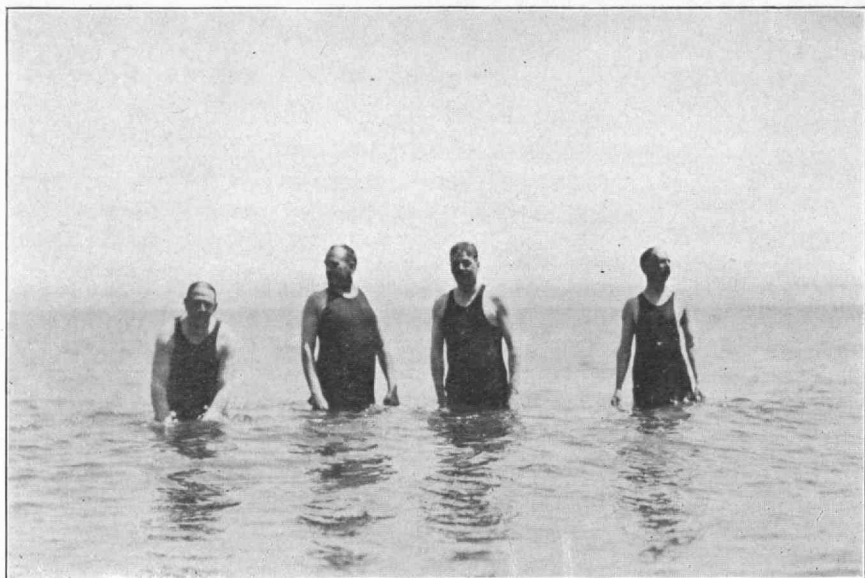
Adams

Thompson

Snow

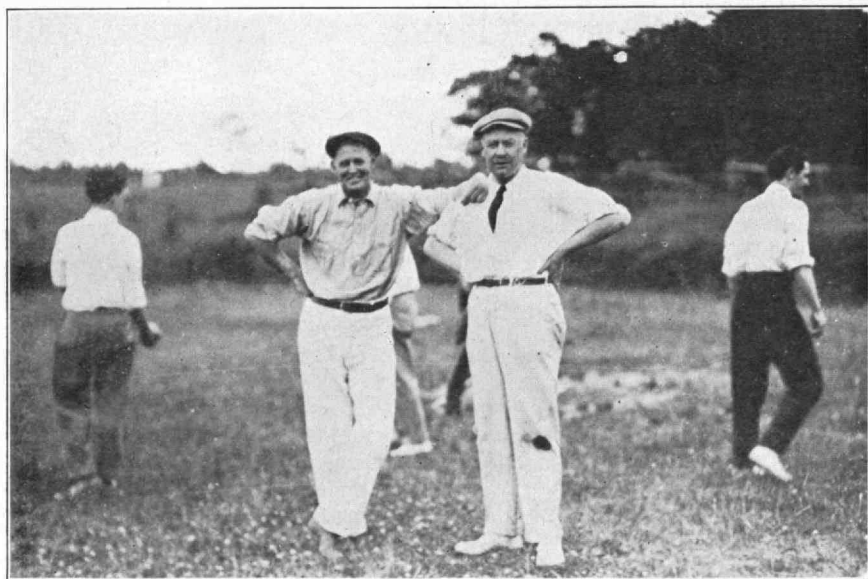
Jordan

Baldwin



Class of '88

THE BATHERS  
Blood Sawyer Hazen E. Collins



Class of '88

OUR BATTERY  
Wood B. R. T. Collins



death of William M. Currier, formerly of Lynn, Mass., who died in Chicago in March.—Fish, returning from a trip to Porto Rico, reports meeting Victor Cummock, who is interested in sugar plantations on the island.—The following interesting account of Richard E. Schmidt's work was taken from a Chicago paper:

Two Chicago hospital builders. John A. Hornsby and Richard E. Schmidt, have gained high recognition. The federal government has adopted officially their recent book on hospital construction and management.

"The Modern Hospital" is the name the Chicagoans gave to their collaboration, which has been selected by the government authorities as the law on hospital matters. The modern hospital as conceived by them embodies many of the features of the Michael Reese Hospital, which was built from plans by the authors.

"We feel highly elated over the honor which has been paid us by the government," said Mr. Hornsby last night. "It is the highest form of recognition our book could receive."

Mr. Hornsby was superintendent of the Michael Reese Hospital for seven years and during that time directed the construction of the Sarah Morris Hospital, said to be the most modern children's hospital in the world.

Plans, diagrams and photographs showing architecture and equipment of the latter hospital figure prominently in "The Modern Hospital." Mr. Schmidt was architect for both hospitals.

Since the completion of the book Mr. Schmidt has been appointed county architect and has shouldered the task of building the county's new \$2,500,000 hospital which was started by Paul Gerhardt under the Bartzén administration of county government. Mr. Hornsby has been appointed as expert adviser to the architect on the county job.

1888.

WILLIAM G. SNOW, *Sec.*, 24 Milk Street, Boston, Mass.

The main item of interest to '88 men in this issue is the account of the twenty-fifth anniversary celebration of graduation. On the morning of Friday, June 6, about thirty members of the class left the Technology Club for Charles A. Stone's home at Rocky Point, Plymouth. Before leaving, neckties in class colors and '88 arm-bands in Tech colors were distributed. After a beautiful run along the South Shore, the party arrived in ample time for a stroll about the grounds and for tennis or a swim before luncheon. This was served out of doors, music being furnished by a twenty-piece band. This occasion will long be remembered by those so fortunate as to be present. After luncheon a most interesting trip was made through the stables, a number of beautiful horses and ponies being shown in the yard. Late in the afternoon we bade adieu to our hostess, Mrs. Stone, and joined by Charles A. Stone in his auto, making a total of ten, proceeded on our way. Stops were made at several points of vantage on the Cape Cod Canal now under construction. After this inspection a run of some twenty miles brought us to our destination, the Cotocheset, Wianno, Mass., on Nantucket Sound. Here we had two cottages reserved for the class. After dinner, at which a souvenir stein was presented to each member, all went to the Casino for a smoker and songfest. Here bathing suits were distributed. These were in class colors, one half the suit being crimson, the other half black. There were

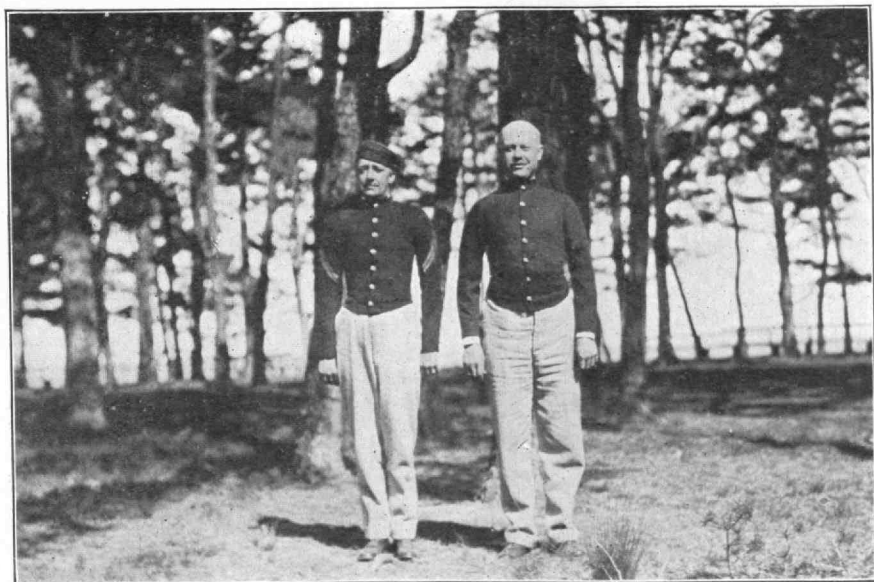
plenty of early morning bathers, the suits provided by the class giving a very cheerful effect. After breakfast Saturday, one party left for the golf links, others practised baseball and the tennis tournament started, Shaw defeating Jordan, and Bradlee defeating Snow. The cup finally went to Shaw. At about eleven, sixty-five members of the class of 1913 arrived as our guests for the balance of the day. Bathing suits were provided for all who wished to go in, others played tennis and a good time was enjoyed. A combined group picture was taken just before luncheon. Each '88 man took two '13 men to the table where a regular Cape Cod shore dinner was served. After the cigars were lighted, an address of welcome was given by President Sawyer of '88, to which President Mattson, '13, responded. A. T. Bradlee and E. S. Webster both spoke entertainingly and gave the boys some good advice. After dinner both classes took autos for the ball field where '88, with a lot of veterans, defeated '13 to the tune of 15 to 4 in our specialty, "soft" baseball. A full account of this game is given in the special twenty-fifth anniversary number of *The Tech*, published by the class of '88. The baseball championship cup was awarded to Collins who richly deserved it for the snappy game he put up. Our guests gave us an exhibition game of regular baseball, which unfortunately had to be called late in the afternoon on account of rain. After a combined "sing" in the Casino, our friends left for West Barnstable for their special train which pulled out at six o'clock. The class dinner took place Saturday evening, June 7, thirty-six being present. President Sawyer acted as toastmaster and called on Roberts, Jordan, Horn, Besler and Blood, all of whom responded. During the dinner Buttolph, in the most gracious and hearty manner, acting for the class, presented the secretary with a magnificent silver punch bowl suitably inscribed. The secretary responded, expressing his feelings very inadequately, he fears, as he hadn't the slightest inkling that anything of the sort was going on. The pleasure to be derived from such a gift, representing all that it does on the part of one's classmates, is deep and lasting. Friends are our most priceless possessions. The arrival of Gammons from New York in the midst of the dinner was a pleasing incident and he had the honor of bringing the total number of members attending the reunion up to forty. At a business meeting the secretary's report was read and approved, and A. H. Sawyer was reelected president. After dinner, our indefatigable Collins, chairman of the sports committee, started the crowd off to Hyannis to bowl. Here we wound up a busy and altogether delightful day, Gammons easily winning the bowling championship cup. Sunday was spent in auto trips down the Cape; some engaged in the quieter sports, while another large group went sailing in a big Cape Cod cat-boat. Sunday evening was cool and all sat about the big stoves reminiscing, swapping stories and cementing old friendships; a delightful evening. On Monday, the





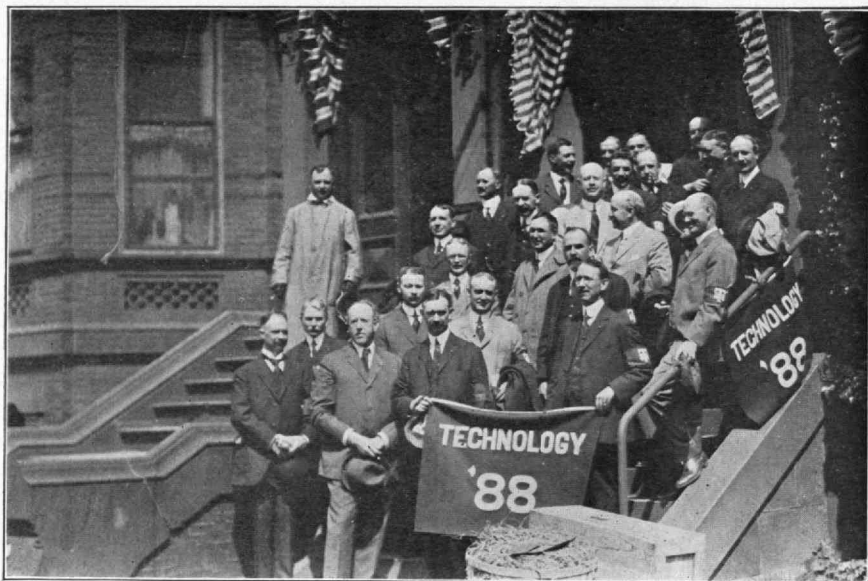
Class of '88

UMPIRE WEBSTER



Class of '88

"COMPANY FRONT"  
Runkle Collins



Class of '88

# GROUP AT THE START



Class of '88

# SOME OF THE SURVIVERS



Class of '88

A GROUP IN FRONT OF THE COTOCHESSET



'88-'13 GROUP

last day of our reunion, the weather still remained superb, making the auto trip to Boston a most pleasurable one. Several autos leaving Wianno during the morning under the guidance of George C. Dempsey proceeded to the Bread and Cheese Tree Inn, Cohasset, where, from all accounts, a sumptuous repast was served. Some of the golf enthusiasts remained later than the others to have a final round of the links. Snow brought home the golf trophy. The long distance cup went to Jordan who came from Chicago for the reunion. Everyone was enthusiastic over this twenty-fifth anniversary outing and looks forward to our thirtieth.—W. N. Foss of Campello was with the class at the Potlatch, as were also Gage, Lee, Underhill, Gerrish and Bates, who had been unable to accompany the class to the Cape. The '88 class stunt consisted of a reproduction of *The Tech* made up of items culled from the issues of undergraduate days including class songs, to which was added a lot of contributions from those present at the reunion.—Buttolph is with the American Society of Mechanical Engineers in Germany.—W. K. Leonard, who was with us during the early part of our course at the Institute, wishes to be remembered to the boys. He is now president of the Piqua Hosiery Company, Piqua, Ohio. Announcement was made in May of the engagement of Harold A. Pitman and Miss Christina S. Whitney of Boston.—The secretary regrets to report the death of William F. Spurr which occurred February 18 last, in Dorchester, Mass.

1889.

WALTER H. KILHAM, Sec., 9 Park Street, Boston, Mass.

Over a dozen members of the class met on June 4 at the Engineers Club for lunch. The matter of the forthcoming twenty-fifth reunion was discussed with much interest and a project for spending two or three days at some resort on the South Shore next June was received with great enthusiasm. A motion to invite the wives of members was defeated but it was unanimously voted to invite them to be present at the fiftieth anniversary, thereby making an object worth living for. About half past three the crowd adjourned on Alley's invitation to his Brewery on Heath Street where after due inspection and approval of the plant an "afternoon tea" consisting of Brewery and other abundant products was enjoyed. About five o'clock on Howard's invitation another adjournment was made to the new Commonwealth Pier in South Boston and to the Hamburg-American S. S. *Cincinnati* where a reception to the business men of Boston was in progress. The whole formed one of the pleasantest afternoons that the class has ever spent. In this connection notice ought to be taken of Howard's public spirit for it was largely through his efforts that this pier, the largest in the world, was built and the Hamburg-American line inaugurated its Boston service.—At the semi-annual dinner

of the American Iron and Steel Institute, New York City, May 23, Prof. Fred Crabtree gave an after-dinner speech on "Current Tendency in Technical Education." Other speakers were H. M. Howe, Judge Cary, C. M. Schwab, etc.—E. A. Crane has been appointed Philadelphia city architect at \$4,000 salary after civil service examination.—The street car traffic in Providence, R. I., has become so congested that the city government has appointed a joint special committee on subways which is instructed to recommend a subway scheme for the city. This subway committee has engaged W. W. Lewis, assistant engineer of the Boston Transit Commission of Boston as consulting engineer to study the situation and recommend a comprehensive scheme of subways for the city. Lewis is expected to devote a portion of his time only to this work.—The following interesting letter was received in April from Water G. Wuichet:

Your letter received and it finds me and mine alive and not badly hurt. I live on a hill and while the factory had three feet, ten inches of water on the second floor, about sixteen feet deep on Canal Street, we were comparatively speaking not badly damaged. The loss of life was over-estimated but the horror, the many narrow escapes, the exposure and the awful loss of property was only half told.

I cannot tell you the terror of it all. Nearly an entire city covered with from six to twenty feet of water, with the current so strong that no boat could live in it on many of the streets, fires burning in several places and no one could reach them or get the people away. To tell you how these people escaped would fill a book and you would not believe me if I told you.

Our banks did not break; the river came over them in huge waves carrying hundreds of houses with them, wiping out nearly all the stock in our retail stores, drowning about 100 people, 1,250 horses, and leaving, after three days, a deposit of about six inches of sticky mud on everything. Stores, cellars, houses, churches, all had to be shoveled out, and after working every man, horse and wagon, steam shovels and railroad trains, which we ran on our street car tracks, and spending \$300,000, we still have our streets full of mud and hundreds of overturned houses are where the water left them. We are far from being over the flood. Dayton's entire loss is not estimated at \$128,000,000.

We are hit hard but expect to get cleaned up in several more weeks and then will commence to rebuild and make a bigger and better Dayton. The flood was unprecedented and everybody got hit somewhere.

I am sorry I can't tell you more details but if I start I could not stop for a day. The flood, the fire, the anxiety about friends, the crash of buildings, the standing in line for bread sent by outside friends, the rescue of people by boats, the housing of refugees, the greatness displayed by J. H. Patterson of the National Cash Register Company (read Ruhl, in last week's *Outlook*), the work of the Government Sanitary Commission, and the "Red Cross," the help of the troops, the days of labor, the sleepless nights of waiting for daylight. This cannot be written, it must be seen.

Our stores are already getting into the running; our factories are moving, and next year we will again show you the "Gem City of America." We have been through the greatest flood of the age. We are hit and know it, but the city can and will survive and grow. We are the "home of a thousand factories." All of them are now running full time. We needed help to get out of the mud; we needed food to keep from starving; we got them, thanks to a generous people. We still need some government help to get the mud out before sickness is caused by it.

—John L. Mauran, who recently acted as one of the jurors in the New York court house architectural competition, has accepted the invitation of the Detroit library commission to constitute one of a jury of three to render a verdict on the design of Detroit's future

library building. In the erection of the Chicago public library and the art institute, Mauran actively represented the firm of Shipley, Rutan & Coolidge.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

At the alumni reunion in New York January 17 and 18, seventeen members of the class were present during part or all of the gatherings. On Friday at the meetings by sections, the class was scattered in their different courses, but all reported the meetings as being most interesting. On Saturday the class luncheon was held at the Metropolitan Club, where we were guests of our president, Charles Hayden. Lunch was served at one o'clock, and the fact that it was after five o'clock before we left the table, tells the story of our enjoyment of the afternoon. Thirteen were seated around the table, and after a most satisfying repast accompanied by the proper dampness, a general social talk followed. Each man told of his business and life work, and the time passed all too quickly. Calkins spoke of the investigations he has been making for the cause and cure of cancer, and we certainly feel that he is on the right road that will eventually lead to a check on that terrible malady. From Whitney we heard of the improvements made in lighting that have resulted in the well known Mazda Lamp. Goodwin spoke on electro-chemical investigations and the many steps leading to the cheapening of electric power, and the wonderful developments in this line in Norway, where water power has largely taken the place of coal and transportation. J. K. Noyes described the manufacture of combs and the many changes in the work and materials used in the past generation. Gilmore told of the converting of cotton cloth from the loom into the finished fabric, through the various processes of bleaching, dyeing, and printing. Towne gave a most interesting talk on locks and keys, and the different uses of master keys as in a large hotel, and the care thereby taken to prevent robberies. Rice spoke of engineers in general, and the efforts he was making to have them take more interest in welfare work and public affairs. Nims described his work for the past five years as architect on the New York Municipal Building now in course of construction. Hazard, as a power engineer in the construction of the great Pennsylvania Terminal in New York, described the work, the large gang of thirty-five hundred men working, and the vastness, number, and depth of the many tunnels and viaducts required, and the removal of some three and a half million feet of earth and rock to the Jersey shore. He also spoke of some of his earlier work in the new Grand Central, and the tremendous increase in the present results as compared with the first plans. Voorhees gave an interesting talk on refrigeration engineering, and the use of carbonic acid in connection with the same, on which he has taken out many patents. He described a



new state of matter he has found that he calls "liquous" being a stage between gas and liquid. Vorhees predicts that before many years, it will be cheaper for northern cities to make their own ice rather than to wait for nature, and that the necessary power for freezing can be obtained from the latent heat now lost in the condensation of exhaust steam, in our numerous electric light plants. Eisendrath spoke of his work as an architect, and particularly in the line of designing successful restaurants, and the carrying out of the proper color schemes. Rogers gave a talk on mining engineering and his work in Mexico, South America, and the West. From Hayden a general talk on finance, the good of publicity, and the great benefit to be obtained by bankers and financiers using the best of engineers in making investigations in all undertakings. Horton and Burley were present Friday but unable to remain over. Tuttle showed up Saturday night for the banquet. Towne was obliged to leave after the luncheon. At the banquet the class table was nearly in the center of the hall, and the boys did their share of cheering, including a cheer for eighty-nine and ninety-one. It was the sentiment of all that at our twenty fifth anniversary in 1915 all members of the class should make a special effort to be present during the week of festivities that will be planned.—Calkins left for Woods Hole the last of May with his family to occupy his cottage for the summer. He has bought a winter residence at Scarsdale, N. Y., that he will move into next fall.—Charles W. Sherman, assistant engineer of Metcalf & Eddy, of Boston, has been admitted to the firm. The firm is engaged in a general engineering business, giving particular attention to problems relating to water works, sewerage, drainage, and the treatment and disposal of sewage and industrial wastes. It has specialized in the operation of such works, both in an advisory way and as managers of water works, electric light and power plants, and sewage and industrial wastes disposal works, and has made many reports upon and valuations of public service works. At the annual meeting at the City Club of the Boston Society of Civil Engineers, March 20, Sherman was elected treasurer.—F. C. Moody is now with the Bell Telephone Company of Pa. at Philadelphia.—Guy C. Emerson has changed his residence to 5 Agassiz Park, Jamaica Plain, Mass.—Charles Hayden was one of the state and city committee at the centenary dinner of the Treaty of Ghent, given at the Hotel Somerset May 10 to the foreign delegates to the International Peace Conference.—William L. Creden, engineer of Davis Daly, says: "Have opened up a ledge of solid bornite high-grade copper ore on the 1,400 level southeast in a faulted section of the big vein. The ore still continues in the breast of the crosscut. This area has never been explored on any level in the mine."—Spaulding Bartlett, who has been connected with the Slater mills for many years, was appointed recently manager and treasurer of the plant. He assumed charge this spring upon

resignation of Frank B. Smith of Worcester, who has acted as a trustee of the Slater estate.—Clipping from *Boston Globe* of June 3 of a statement from W. Z. Ripley:

Instead of being able to finance securities at a relatively fair rate of interest, the railroad companies have been compelled to pay high interest rates and even then in most cases to secure the needed funds solely by the selling of short-term notes.

One statement recently made by a high authority, Prof. William Z. Ripley of Harvard University, has made a deep impression upon shippers. Professor Ripley calls attention to the fact, deplorable and even alarming, that at this time the St. Paul Railroad Company is unable to market bonds bearing  $4\frac{1}{2}$  per cent. of interest at par. He is certain that the only way to relieve this situation is in rate advances and he couples that statement with the monitory words: 'Unless relief does come from that source the public is going to be denied the facilities and the accommodation to which it is justly entitled.'

The railroad presidents are now persuaded that the application for rate advances will be considered by the public and by the shippers solely upon its merit and without any of the prejudices which prevailed in other years.

—Tuesday evening, June 9, 1913, Atwood, Batchelder, Burley, Rogers and Spaulding dined with Gilmore at the Engineers Club. Later they went to the Tech Potlatch Chantant at Mechanics' Building and enjoyed the festivities of the evening together with the beer and pretzels. Bartlett, De Wolf, Ripley and Wason were also present, coming in later, so Ninety was fairly well represented. —Frederick C. Moody has been twenty-three years in the telephone service, and was appointed March 10, to the office of plant superintendent of the Harrisburg Division. The following statement is taken from *The Telephone News*:

In Philadelphia, Mr. Moody's first duties were in the engineering department of the Bell Telephone Company, soon afterward becoming identified with construction work.

His appointment as superintendent of the latter department came just prior to the rapid changes of the overhead to underground plant in this section. The problems met by that part of the organization may be indicated by the statement that during the ten years (between December, 1897, and December, 1907) of Mr. Moody's occupancy of this position the Philadelphia Bell stations increased from 7138 to 95,914, or over thirteenfold.

—Allan H. Rogers has his Boston office at 201 Devonshire Street.—F. P. Royce had the misfortune in March to break his leg. Fred is now out again but is favoring his weak member by the use of autos and taxies, wherever possible. He is vice-president of the Stone & Webster Management Association and a director of the Connecticut River Power Company.—S. D. Flood has his office at Room 704, Chicago Savings Bank Building, Chicago, Ill.—Alex. S. Bradley is at 5450 Ridgewood Court, Hyde Park Station, Chicago, Ill.—George E. Hale sailed for Europe April 30 for a few weeks' trip.—Ninety now has a grandfather among its members. George W. Fuller reached that distinction on February 13 by the arrival of his grandson, Donald Craig Fuller. If any other members of the class can make a like claim, kindly let us know.—At the Tech Show in Boston Thursday evening, April 17, Goodwin, Hale and Gilmore, with the ladies, occupied a box and had a Ninety banner displayed over the front.—Hayden had a box, but



was detained in New York.—Willis R. Whitney, while professor of chemistry at the Institute, was engaged by the General Electric Company to organize a department of chemical and physical research. The investigations are directly connected with the field of electrical engineering and illustrate the advanced methods of modern industry. When Professor Whitney took charge, the laboratory was a small room and he was assisted by only five men. It now maintains about forty rooms given over to specialized lines of research with a force of over one hundred people. It is to be still further increased by a specially erected seven-story brick building. The studies have developed hundreds of ideas that are being applied in the company's manufacturing operations. The *Scientific American Supplement* writes as follows in regard to these important researches: "The investigations undertaken included researches on electric furnaces and their products, organic and inorganic insulating materials, metallurgical operations, and electric lighting by means of incandescent lamps, luminous arcs, and vapors. Particular stress was placed on efficiency and the spectral characteristics of lighting. During this same period there were produced the so-called metallized carbon filament, the mercury arc rectifier, and the magnetite arc lamp. In the present building, that is, during the third period of the development of the laboratory, the metal tungsten was first produced in such a high state of purity that it could be drawn into wire stronger than the strongest steel, and finer than any metal had before been drawn. Drawn tungsten incandescent lamp filaments have, without doubt, constituted the greatest step forward in electric lighting during the past decade. As a result of this metallurgical knowledge, the tungsten X-ray target and the tungsten electric make-and-break contact were invented, and have proved to be better than the similar platinum articles. During the last ten years electric furnaces of nearly every type and capacity up to 1,000 kilowatts have been studied. The Arseum vacuum furnace and the tungsten resistance furnace, both capable of maintaining a temperature of 3,000° C., are the products of the research laboratory. Naturally, with all these furnaces on hand, hundreds of alloys, binary and tertiary, have been compounded and their physical and chemical properties determined. The magnetic properties of iron and its alloys have been investigated, with the result that, during the last eight years, eddy current and hysteresis losses in transformer steels have been very greatly reduced. Some of the investigations now going on are the preparation and study of alloy systems with such purposes as obtaining high electrical resistivity, resistance to corrosion, and definite coefficients of thermal expansion, the replacement of platinum by such metals as tungsten and molybdenum, the production of high temperature resistance furnaces, the preparation of organic and inorganic insulators, and the study of electrical methods of illumination by means of incandescent filaments, arcs,

or gases. Researches in the laboratory of the General Electric Company, as well as in other commercial laboratories, differ somewhat from researches carried on in universities. This difference lies in the fact that the former must be money-making propositions, while the latter have for their main object the advancement of general knowledge. In a commercial research laboratory, the object of the research is not to start from one point and create a field, but to start from a field to locate one point to find one or more ways of bringing about one result, the development of a process or article for which there has been great need, or which will have immediate practical value as soon as produced."

1894.

S. C. PRESCOTT, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

The Potlatch held at the Mechanics Building on the night of June 10 was attended by ten '94 men as follows: Day, Piper, Warren, Cheney, Lawrence, Taylor, Hopewell, Tufts, Ferguson and Prescott. Plans for next year were suggested and all those who read these notes are hereby requested to suggest a fitting way in which to celebrate the 20th graduation of the class next year. There seems to be no reason why at least sixty men should not show up on that occasion and it is hoped that all members of the class who can possibly do so will make their trips to Boston so as to include the 20th reunion. A committee of the local men will sit up nights over this matter during the winter and a grand campaign will be started in the spring.

Tufts has just brought his family north from Pinehurst to his farm in New Hampshire where he hopes to spend a portion of the summer after a brief business trip to Pinehurst. He reports a son ready to enter college next year and expects him to come to the Institute on the completion of his college course. So far as heard from, this is the first son of '94 who is even within striking distance of enrollment as a student.—A note has just been received indicating that H. S. Reynolds has returned to Boston and is now located at Room 47, Ames Building. The exact line of professional work which he is carrying out is not suggested, but is undoubtedly some branch of engineering.—Thropp is again located in Everett, Pa., after a number of years in metallurgical work in other centers in Pennsylvania.—Price has come on from the Middle West and his address is now given as 830 Park Avenue, New York City.—The '94 man who has made the biggest jump in location during the past year is undoubtedly Davies who has returned to England from Hawaii and his new address is Hawkley Hurst, Hawkley, England. Whether this is a permanent change or one of temporary character, the secretary does not know, but Davies is hereby given notice that he is expected to appear in Boston next year, whether he comes from the East or the West.—N. H. Janvrin is still associated with the New York Water Supply but has

changed his location, his address now being 803 West 180 Street, New York City.—W. F. Spaulding is in the bond business with an office in the Shawmut Bank Building, Boston.—The secretary is just in receipt of a card from Dr. and Mrs. W. H. Sayward, Jr., announcing the birth of a daughter, Mary Sayward, on June 5, 1913.—Mr. and Mrs. R. S. Weston are also proud parents of a daughter born a few weeks ago.—C. A. Howes is engaged upon the preparation of a book dealing with the stamp issue of the British Provinces which will serve as a companion volume to one issued a few years ago dealing with the Canadian stamps. Howes finds the study of stamps very delightful as an avocation and is regarded as an authority upon this subject, as well as the possessor of a collection of considerable value.—Nowell has recently been transferred from Philadelphia to San Francisco as the general manager of the Telephone & Telegraph Company.—Scott who has served most efficiently as inspector of milk for the city of Providence for several years, has recently become the subject of an investigation by various forces of which the Housewives League is the most prominent and the only one acting in the open. From close observation it now seems certain that Scott's victory will be a most sweeping one as the testimony already introduced at the hearings have brought out his absolute fearlessness and honesty in the discharge of his duties, as well as the entire unreliability of the so-called evidence presented against him. It has been the fortune or fate of the secretary to attend some of the hearings and to pass judgment on some of the evidence, so that he feels certain that he knows whereof he speaks, and he is ready to venture the opinion that Scott's reputation as an efficient officer and administrator will receive added lustre.—From a Boston publication we print the following:

In the competition for New York's \$10,000,000 Court House, Guy Lowell won over the heads of twenty-one other architects among whom are some of the best known designers of public buildings in that city.

According to the programme of the Court House Board there were two sets of competitors, twelve of whom were invited to send designs and ten others who won places in the competition by virtue of a preliminary test. Mr. Lowell was one of the latter.

In speaking of Mr. Lowell's plan the jury said in their report to the board:

"This design fulfills to an unusual degree the exacting conditions of the programme. It presents an exterior of high dignity and interest. It gives evidence of great architectural ability on the part of its author. It promises a public monument in every way worthy of the city of New York."

"Mr. Lowell won the prize by ignoring all of the old New York standards in his treatment of the design of the new courthouse, the largest in the country, by planning a building circular in form. It will probably be the largest court house in the world. It will be the principal feature of the new civic centre to be created. There will be room for fifty-one courtrooms for the Supreme Court, with justices' chambers and jury rooms and dozens of other rooms for the special uses of the courts. The City Court will have eleven rooms, with the same allotment of appurtenances.

"This is the most ambitious scheme of city improvement ever attempted in modern municipal government. The full sweep of this plan for a civic centre embraces the demolition of no less than twenty city blocks in the heart of one of New York's

busiest and most populous districts. It would stretch northward from the old City Hall to White street, and almost from Broadway to the Bowery. It would displace a population of 100,000, and would wipe out Chinatown, Mulberry Bend, and many other famous corners of old New York. A few small parks would be obliterated, but in the rearrangement to follow, new parks and broad grass spaces would be created between and about the monumental buildings to be grouped in this great area. The new Court House designed by Mr. Lowell will occupy the major portion of four city blocks, bounded by Pearl, Lafayette, Leonard and the new Baxter street which is to be created. The erection of this building largely guarantees the continuation and realization of this colossal city improvement.

Mr. Lowell after leaving the Institute studied at the École des Beaux Arts. He was architect for the new Boston Museum of Fine Arts, the Cumberland County Court House at Portland, Me., and for several buildings at Harvard, Brown, Andover and Simmons. He designed Clarence H. Mackay's country place at Harbor Hill, Paul D. Cravath's house at Locust Valley and the new Piping Rock Club house at Locust Valley. He prepared the plans for the residence of C. K. G. Billings, the late Hugh Grant, Payne Whitney, Harry Payne Whitney and the residence of President Lowell at Harvard.

—F. P. McKibben, of Lehigh University, South Bethlehem, Pa., has been spending some months studying highway and concrete constructions and water-power developments in France and Switzerland.

—From the *Telephone News* of March 15:

John C. Nowell who has been since 1904 at the helm of the Philadelphia Plant department has left for the Western coast, to assume there the position of general manager of the Pacific Telephone and Telegraph Company.

Mr. Nowell has had an uninterrupted climb, holding a succession of offices in the telephone world. Upon the announcement of Mr. Nowell's removal to the Pacific Coast and his immediate departure from the city a farewell dinner was tendered him at Kugler's on the evening of the seventh by sixty-nine of the men who have been closely associated with him in the organization, largely from the Plant department.

At the conclusion of the dinner Mr. Meixel, as toastmaster, called for responses from twenty-four of those present, among them Mr. LaRoche, who, on behalf of Mr. Nowell's friends and associates, presented the guest of the evening with a handsome loving cup bearing the following inscription:

Presented to  
John C. Nowell  
as evidence of the esteem and affection  
of his friends in the service of the  
Bell Telephone Company  
in Pennsylvania  
on his promotion in that service and  
Departure for the Pacific Coast  
March 7, 1913.

1895.

WILLIAM H. WINKLEY, Sec., 44 Kilby Street, Boston, Mass.

The annual meeting and dinner of the class of '95 was held at the Boston City Club, June 10, at 6 p. m. The following members were present: E. H. Clapp; G. Clapp, G. F. Shepard, W. D. Parker, J. L. Newell, L. K. Rourke, R. R. Lawrence, J. E. Walworth, E. F. Badger, R. Williams, L. G. Waite, J. Williamson Cook,

Wallace Brackett, E. J. Loring, G. W. Hayden, G. A. Rockwell and W. H. Winkley.

Plans for the 20th reunion were discussed and the general sentiment expressed was in favor of a celebration similar to the 15th reunion, which was held with such success at Squam Lake in 1910, but at a place more accessible to those members of the class who are located in New York City and vicinity. The president appointed G. W. Hayden, G. A. Rockwell, F. C. Schmitz and F. T. Miller a committee to investigate the possibility of securing an available place in the Berkshires, Southern Vermont or Northern Connecticut, where the members may enjoy out-of-door life for two or three days, and indulge in their favorite sports. With Rockwell and Miller on this committee it is safe to predict that lawn tennis will be a prominent feature, and it behooves all devotees of this fascinating game to practice assiduously during the next two seasons, for this doughty pair have asserted loudly that they intend to continue to hold the championship they won so creditably in 1910. One of the most pleasing features of this year's dinner was the presence of the professional agriculturist of the class; Loren G. Waite, the enviable proprietor of Waite Farm, Bradford, R. I. He was besieged with questions by the amateur farmers present and talked so delightfully of irrigation systems, chemistry of the soil, and the joy of air, sun and growing things, that he was actually embarrassed by offers from those present to engage at once as farm-hands at any wage he saw fit to pay. At the conclusion of this meeting exactly one ton (lacking 40 lbs.) of the members present climbed aboard George Shepard's automobile and were transferred without accident to the Potlatch Chantant at Mechanics Hall, a feat made possible by the trustworthiness of the above mentioned machine, but chiefly because of the excellent state of Boston's streets, the credit for which is of course due to the class of '95, for having furnished our city with so efficient a commissioner of Public Works. At Mechanics Hall several members who were unable to be at the dinner joined the party and helped enliven the proceedings with the justly famous '95 yell.

—From the *New York Sun* of May 4:

The engagement has been announced of Miss Louise Rogers, daughter of the late Mr. and Mrs. Charles E. Rogers, formerly of Columbia Heights, Brooklyn, to George Nichols, also of Brooklyn. Miss Rogers was graduated from the Brooklyn Heights Seminary and Smith College.

Mr. Nichols, who is an architect, associated with Donn Barber in this city, was graduated from the Massachusetts Institute of Technology in 1895. He was supervising architect of the Grand Central Station improvements of 1897 and 1898, and later one of the architects for the New York Central Railroad.

—The *Telephone Engineer* for May had a two-column page headed "Who's Who in the Telephone Game," with Gerard Swope for its subject. It traces his work from the bottom to the top rung of the ladder, as salesman and manager in the service of the Western

Electric Company. As a reward for his merit he was elected vice-president in January of this year, although he still directs the selling.

1896

CHARLES E. LOCKE, *Sec.*, Mass. Inst. of Tech., Boston, Mass.  
J. ARNOLD ROCKWELL, *Asst. Sec.*, 24 Garden Street, Cambridge.  
Mass.

Frederick William Fuller was married to Miss Elizabeth Leonard at Christ Church, Springfield, on May 29. George A. Fuller, '97, was best man. Of the Tech men among the ushers were: Ben Hurd, '96, Harry Fisk, '96, F. W. Lovejoy, '94, A. D. Fuller, '95, I. du Pont, '97.—Easter Sunday, Partridge resigned from the rectorship of St. Michael's in Marblehead after a pastorate of six and a half years. The following excerpt is from the *Marblehead Messenger*:

Rev. Mr. Partridge has made many friends and has become very popular among Marblehead people during the period of his stay in Marblehead.

He is not to give up the active ministry, as has been reported, but has plans at present to take up Sunday supply work in the churches of Boston and vicinity. Rev. Mr. Partridge contemplates leaving town about the last of May, but has not fully decided just where he and Mrs. Partridge and their little daughter, Dorothy, will make their new home.

—The following attended the Potlatch Chantant at Mechanics Building: Hultman, Thompson, Wise, Sanderson, Harry W. Brown, Grush, Hersey, Bell, Robinson, M. L. Fuller, Hatch, Rockwell, MacLachlan, Hayward, Driscoll, Rutherford, Locke, Cummings, Jackson.—Rutherford has been located in the foundry business at Saltillo Mex., but has been out of that country for two months, taking a long vacation. Business was so interrupted that he felt it hardly worth while to stay on the job, especially as he had competent men to look after whatever business there was during his absence. This was the first time that his classmates have had an opportunity to see him since his graduation. He is making an extended stop in Boston, and his headquarters are at the Hotel Harvard.—Cummings reported that his architectural work is keeping him busy, but not thin. He has the new Boston City Hall, and also the new Merchant's National Bank building at the corner of Devonshire and State streets. The bank building contains no wood and is to be very ornate, being all granite and limestone with ornamental metal, and bronze and baked enamel whole metal trimmings. It is designed to be a monument to the banking industry.—The following items of news were given to the secretary at the gathering. Owing to limited time, no investigation has been possible to determine their truth, and they are, therefore, submitted, subject to later verification: Partridge was reported to be moving, and, therefore, unable to be present, but he sent a kiss to everyone.—Harold C. Stevens was reported to be



the happy father of twins; these making six children in Stevens' household.—Johnny Rockwell has a new limousine for use in visiting his patients. This makes him far more exclusive than he was in his old runabout. He has also been appointed medical advisor for Technodoly students, replacing Dr. White. If any of the boys are sick next year, it will not be the doctor's fault.—Fred Coburn is still in Lowell and has been ill, but is improving. He still has to turn in at 7.00 p. m., however, so that it was impossible for him to be with us.—Jacobs came down to Boston from Burlington for a short stay the latter part of June. He divides the summer between geological study at Columbia and State geological field work in Vermont.—N. H. Daniels is also reported to be married, or to be on the verge of it.—Ben Hurd appears in Boston periodically in connection with alumni meetings, but he was unable to arrange his trips to be at Mechanics Building.—Harry Brown has been starting a side line in the cranberry business on Cape Cod, and has tried to beat M. L. Fuller. His bog is two years old, and the first year it received first prize at both the Barnstable and Brewster fairs, and the second year it yielded the biggest crop at the highest price of any two-year-old bog on Cape Cod. He has a pump which will deliver 22,000 gallons per minute for flooding purposes.—G. S. Hewins writes from San Francisco as follows:

For several years I have been on the Pacific Coast with the J. G. White Engineering Corporation. My headquarters are in San Francisco, but I am there less than anywhere else. This season I shall be located down in the San Joaquin Valley in charge of the construction of three hydro-electric projects and two steam power plants. My home will be on the sleeping car, and I shall get back to headquarters about once in two weeks.

—The following address changes have been received: Charles W. Davis, 302 Quaker Road, Edgeworth, Pa.—N. C. Grover, care of U. S. Geological Survey, Washington, D. C.—James A. Dupee, Cotuit, Mass.—Floyd Frazier, 1101 Westminster Bldg., Chicago, Ill.—G. S. Hewins, care of J. G. White Engineering Corporation, Alaska Commercial Bldg., San Francisco, Cal.—J. E. Lonngren, 1148½ South Flower St., Los Angeles, Cal.—Charles Morris, Jr., Navy Yard, New York.—Reginald Norris, 105 Montgomery St., San Francisco, Cal.—J. Porter Palmer, care of Lamson Company, 161 Devonshire St., Boston, Mass.—Charles H. Paul, U. S. R. Service, Arrowrock, Idaho.—K. A. Pauly, 10 Parkwood Blvd., Schenectady, N. Y.—Albert E. Smyser, 239 South Fairmount St., E. E., Pittsburgh, Pa.—L. N. Whitney, "The Cambridge," Penn and Michigan Sts., Indianapolis, Ind.

—The *Electrical World* of June 7, tells of the appointment of Theodore I. Jones as chairman of the Commercial Section of the National Electric Light Association. He is general sales agent of the Edison Electric Illuminating Company of Brooklyn and has been for the past year vice-chairman of the Commercial Section.

Jones originated and equipped the first school of instruction for telephone traffic, writing the first book of instruction for handling long-distance business. He has been in demand as a lecturer on telephone topics for the New York Board of Education in the public and high schools of the city, and his lecture work also includes electric light, power and railway subjects.

1897.

JOHN ARTHUR COLLINS, JR., *Sec.*, 67 Thorndyke Street, Lawrence, Mass.

Edward G. Portner of Washington, D. C., was married on June 4 to Miss Anna Ford Moncure, daughter of an Episcopal clergyman of Virginia. Miss Moncure was a graduate nurse at the George Washington Hospital, and it was while there as a patient that Mr. Portner became acquainted with her. The wedding was a great surprise to the friends of both parties as all plans were kept secret until a short time before the ceremony. Mr. Portner is president of the Capital Construction Company of Washington.—We note in one of the *Engineering Reviews* favorable notice of a recently published book, "Steel Rails," by William H. Sellew, Course II. Sellew is now principal assistant engineer of the Michigan Central Railroad. The book is published by D. Van Nostrand Company at a price of \$12.50.—At the organization of the newly formed Technology Club of Lower Canada recently in Montreal, D. J. Spence, was elected a member of the board of governors. F. E. Healy was also present.—We have news of Hugh Moore, through the *Pulp and Paper Magazine of Canada* as follows:

Mr. Moore, chief chemist for the Brown interests, is spending his entire time at their La Tuque Mill for a few months, bringing that mill up to his very high standard of scientific control. In this connection he is carrying on numerous and elaborate experiments to adapt his mill to Canadian conditions. The record of their Berlin mills, and the Burgess sulphite, have been a wonder in pulp manufacture. Mr. Moore has become a veritable wizard, and keeps himself and his twenty-five chemists hard at work continually in the numerous pulp and paper laboratories, which are without doubt the most elaborate in the world. He has made not thousands but hundreds of thousands of dollars for his principals, which goes to show what can be done by a realization of the value of technical experts. In this connection we take occasion to deprecate the tendency among some other mills to try and find out by means, fair or foul, the secrets so discovered by others. These secrets are only scientific facts, which are the reward of an untiring searcher. Only by spending energy and money can they be discovered, bringing to the owners at the same time all the benefits derived from such investigations. We feel it would be better for the industry as a whole if these results were less closely guarded, but one can hardly expect anything else when so few mills spend money in these departments.

—A. H. Pugh, Jr., was married in April to Miss Elizabeth Worthington of Cincinnati, Ohio. Mrs. Pugh is a musician of much ability, and is also interested in art and literature. They will make their home at 1912 Madison Avenue, Cincinnati.



1898.

A. A. BLANCHARD, *Sec.*, M. I. T., Boston, Mass.

Blessed by beautiful weather and a representative body of '98 men, the 15th reunion of the class has passed into History. Friday, May 30, the following men assembled at the Technology Club, 83 Newbury Street, Boston, for the ride of eighty miles over the road in automobiles to the Hotel Cotocheset, Wianno, Mass.: E. R. Barker, A. A. Blanchard, H. P. Bodwell, C. E. Bray, W. L. Butcher, E. S. Chapin, H. L. Coburn, H. K. Conklin, C. H. Smith, M. F. Delano, D. W. Edgerly, D. C. Fenner, L. D. Gardner, Hollis Godfrey, C. Goldsmith, J. H. House, Jr., S. K. Humphrey, I. H. Kaufman, Edwin Kutroff, L. D. Peavey, F. B. Perry, S. S. Philbrick, H. P. Richmond, E. F. Russ, E. N. Curtis, A. R. Shedd, H. F. Scott, G. R. Wadsworth, E. A. Weimer, C. -E. A. Winslow, Geo. H. Wright, Allston Sargent, A. H. Jacoby. The automobile owners, who kindly furnished cars were: Blanchard, Coburn, Barker, Perry, Butcher, Smith, Wadsworth and Shedd. A Mack motor truck, appropriately decorated was secured through the good offices of Dave Fenner, and headed the procession. The truck carried all the luggage of the men, souvenirs, athletic goods, etc. As fast as the arriving members registered, they fitted themselves to a grey flannel hat, with '98 in blue numerals on the front. The start was made at 10.30 o'clock and everything had been arranged for a private dining room at Hotel Samoset, Plymouth, Mass. After a leisurely trip down the South Shore, going by way of Jerusalem Road, we lunched a little after 1 o'clock. Shortly after 2 we were on the road again, and between 4 and 4.30 arrived at Wianno. There we found the New York "Squadron" (as they described themselves) consisting of one "battleship," Dick Brown, and two "Destroyers," Reg Toby and Billy Tew. Shortly after Charley Wing from New Bedford hove in sight. A swim was first on the programme, and the water was found warm and refreshing after the long ride. About 7 we wended our way to the dining room in the Hotel Cotocheset. We slept in the cottages which are large and were all ours. The dinner, like all the meals, was above reproach, as far as the food and service were concerned, and that reminds us; before dinner that evening, and ever afterwards we found a most attractive room in the rear of one of our cottages, skillfully presided over by a chap in a white apron, who, while not a Tech man, could scientifically frame up proposition after proposition that wonderfully eased the burdens of life. After our first dinner was over, we adjourned by means of the famous snake dances through the woods to the Hotel Casino where a five piece orchestra awaited us, and played the authorized class song "Snooky Ookums" made famous by the reunion. We sang, we danced, we auctioned, we poked. A keg of beer reposed on the stage and about 1.30 a. m. we turned in,—at least some of us did. Next

morning we breakfasted together in respectable season, and W. A. Robinson, Jr., and Ira M. Chace, Jr., of New Bedford joined us. A tennis tournament was started and finally on Sunday weeded down to a South Shore championship between Maurice Delano and Charley Wing, the latter pulling it out after a hot match 2-6, 7-5, 6-1. Golf matches at the Sepuñt Club were also frequent that day, and some good scores were made. A cup was offered in each event. Saturday afternoon we all bundled into automobiles and went to the ball field about a mile from the hotel. Here the "Red Sox" played the "Giants." Except for some diversity of opinion, as regards the rulings of the umpires (a couple of cheap sports, imported from Cleveland and New York) the game was a success. At least the "Red Sox" said so, and when they talked no one else could be heard. Butcher kept score or said he did, but we can't find any record. In the midst of the game who should arrive but Col. Bob Allyn and George Treat, and this leads us to the pathetic story of how Bob was seduced shortly after the game on the arrival of the teams and their loyal supporters back at the hotel. Lester Gardner led him to a quiet room and pumped some of his famous hot air into the aforesaid Bob, and in the meantime beautiful little pop guns were supplied some thirty soldierly-minded members of the '98 battalion, who waited outside. It was a rare sight when our distinguished member of the New York militia was unleashed from Lester's charms and cast his eyes across the street to the splendid company he was destined to command. Colonel Allyn was presented a toy sword and wonderful red costume, and did his duty as a man and a soldier, and, believe us, it was some duty, when we passed our little cottage with its attractively furnished rear room. Saturday night was our banquet, and there was something doing every minute. Charley Winslow presided and did the honors in a way that only he can. The sumptuous repast had hardly begun when two professional entertainers made their appearance, and in an excellent style played the piano and sang. This was worked at intervals during the dinner, and after the cigars had been lighted, each man was called upon for a one minute sketch of what he was doing for his country's good and his own. Ed. Weimer our one-time mayor of Lebanon, Pa., and now member of various commissions, legislatures and committees, gave us an extra talk for many of us had not seen him in fifteen years. This feature was followed by one of the most amusing and clever stunts ever pulled off by our famous class. It consisted in giving toys and favors appropriate to each man. All brought out much merriment, and each of the forty men took his turn. After the dinner the cup won in New York at our reunion in February, was filled with champagne and each man took a sip and passed it on around the table. Another feature of the dinner was the presentation of the long-distance cup to George Wadsworth, who came from Cleveland to attend the reunion. A large fat cocktail shaker was pre-

sented to the heaviest man and went to George Treat. A slim cocktail shaker was presented to the lightest man, Frank Perry. Both of these were given the class for presentation purposes by our good comrade in arms,—Dick Brown of New York City. The dinner over, we took our entertainers to the Casino and they kept things moving for quite some time. Sunday we gradually broke up and between bidding the men good-bye, swimming, tennis playing and golf, we put in another busy day. Our numbers were decreasing but while Sunday night found us small in numbers, we were still strong in spirit and kept things moving until our party broke up Monday afternoon. We then sadly turned our backs on Wianno, where our joy had been rampant, and our friendships of long ago had been further cemented. During the reunion, a short business meeting of the class was held and the resignation of the present secretary, E. F. Russ, was accepted, and A. A. Blanchard of the Massachusetts Institute of Technology was elected to take his place. An innovation in the affairs of the class was introduced and acted upon when it was decided to form an executive committee to work in connection with Professor Blanchard in stimulating and keeping intact the spirit of our class in different sections of the country. This seemed necessary in view of the fact that our men were very greatly dispersed. L. D. Gardner was appointed from New York, George R. Wadsworth of Cleveland, C. W. Pendell, Chicago, E. F. Russ, Boston. It was also arranged that this committee could be indefinitely increased covering different sections of the country at the option of the secretary, and the present executive committee. It was also decided to publish a class book giving a full account of the reunion and containing numerous pictures taken at that time. This book will be also a directory of the class and it is hoped that every member of the class will promptly respond when data are asked for from him for use in this book. At the Potlatch Chantant given in Mechanics Building, Tuesday, June 10, every five year class was supposed to do some stunt and having exhausted our energies to a certain extent and shot our powder at the Wianno celebration, we decided on a simple stunt. Some crutches, canes, bandages, eye shields, coat plaster, etc., were distributed among the men present at Mechanics Building and who represented '98. Headed by a transparency with "Class of '98" on one side and "Sole Survivors of our Fifteenth Reunion" on the other side, we paraded around the hall and across the stage to the tune of "Snooky Ookums."—One of the most interesting experiences of the evening was having with us Jack Bleecker, who had come from Georgia by way of Chicago to spend a few days in Boston. F. F. Colcord from New York City was also present.—Dr. Hollis Godfrey who is chief of the Bureau of Gas in Philadelphia is coming in for a great deal of praise from the press of the country together with a number of other Technology men who are associated in other departments of Phil-

adelphia's reform administration. His work consists not only in the care of fifty-odd thousand lamps scattered over 129 square miles of territory, but the complication of working with a gas company which has already made its terms with the city. One of the tasks successfully carried through by Doctor Godfrey is convincing the company that it is good business policy to exchange the old flat burners for mantle burners. Besides his experience in the gas bureau, he has previously been employed by the city as consulting engineer in the study of the water system.—Durand Churchill invented the Durand Steel Locker and organized the business of the Durand Steel Locker Company. This concern is the largest manufacturers of lockers in the world, and most of the large educational institutions in this and other countries are now using them. Churchill, the first part of the year, returned from a trip to Australia, Tasmania, and Hawaii, acting on some important and confidential work as consulting engineer.—E. Warren Ritchie who was in charge of a large hydro-electric development in Costa Rica, has opened an office in Petersburg, Va., as a consulting engineer in hydro-electric and municipal engineering work.—David Blossom resigned his position as city engineer of Salt Lake City, the latter part of March. Previous to this position he held for six years the office of chief engineer of the American Falls Canal & Power Company. We understand that Blossom is now identified with a private company engaged in engineering work in Utah, Idaho and Oregon.

—The following comes from the *New York Press* of June 26:

A Commission on ventilation was appointed by Governor Sulzer to-day to make a study of the question of ventilating school buildings.

Mrs. Elizabeth M. Anderson has given \$50,000 to the social welfare department of the Association for Improving the Condition of the Poor for the purpose of such an inquiry and the governor acted on the request of the association.

Professor Charles C.-E. A. Winslow, associate professor of biology of the College of the City of New York, was named as the chairman.

1899.

W. MALCOLM CORSE, *Sec.*, care of Lumen Bearing Company, Buffalo, N. Y.

A few of the class had a dinner on Tuesday evening, April 22, at the Engineers Club at Boston. There were in attendance Swan, Rickards, M. S. Richmond, Skinner, Sherrill, Eaton, Mork and Corse. It was a thoroughly enjoyable affair and had it not been that Mork had to leave early, to see one of his numerous lady friends, we should all have been a solid crowd until about 10.30. Eaton gave us some very interesting information relative to the making of watches and Swan told us all about how to make the buildings of the future successful from an acoustical standpoint.—Rickards tells us that he is getting along nicely in Indianapolis

and thinks the pharmaceutical business, from a biological standpoint, very interesting. Skinner and Corse are running a race to see who will tip the scales at the highest point and it looks a though when the height is considered that Skinner had won. One would naturally think that thirty-two nights on a sleeper the first three months of this year would have taken some of the fat off of Swan, but evidently it does not have that effect.—The general topic of conversation was the fifteenth reunion to be held June, 1914, and your secretary finds that there are several places being investigated now by the Alumni Association and will have a full report on these in plenty of time for the local committee to have the necessary information. Do not fail to reserve a week some time in the early part of June, 1914, for this reunion, as it is certainly going to be a big one.—Ed. Henrich has returned from his trip to Panama and is just beginning to shed a few coats of the brown paint which he acquired while on the journey. He says that he had a delightful time and met quite a few lady friends that proved of interest. However, he still remains a bachelor.—Cushing is always at the meetings of the local Technology Club, Buffalo, and is one of its most loyal supporters.—We have received word of the marriage of Gerald M. Richmond to Miss Isabel S. Bryan, daughter of Mr. and Mrs. James K. Bryan of Virginia.—The following interesting letter comes from Ed. Johnson, who is in Los Angeles:

On January 1, 1913, I succeeded Lieut.-Gen. Adna R. Chaffee, as member of the Board of Public Works, and chairman of the Aqueduct Advisory Committee. The aqueduct, as you probably know, is bringing 400 sec. ft. of water from the high Sierras to Los Angeles, a distance of two hundred and seventy miles through a mountainous and practically desert country all the way, at a cost of approximately twenty-four million dollars. The work incidental to bringing the water will be finished in about two months, but the power development will continue for several years, and an additional amount of probably ten million dollars will be spent on this part of the prospect. When finished the city will be able to deliver a peak-load of some one hundred and thirty thousand horsepower. Our board is also expending three and one-half million dollars on the Los Angeles Harbor at San Pedro, and an election will be held on April 15, when undoubtedly two million and one half more will be voted for this purpose. For a town of its size, Los Angeles, is certainly spending immense sums on public improvements. Los Angeles County, of which the city comprises about seventy-five per cent. of the population, has just completed a system of county roads, costing three and one half million dollars, and are considering the spending of an equal sum in the next few years. The State also has voted bonds and are expending eighteen million dollars for good roads throughout the State, so you can see we are at least good spenders in this part of the country. It makes me smile sometimes to think of the good old State of Maine, in which I spent the first twenty-five years of my life, and which finally appropriated a million and a half for good roads after several years deliberation.

—According to the following clipping from the *Salt Lake Tribune* of March 28, the commissioners appointed S. Q. Cannon, for city engineer, succeeding another Tech man, D. H. Blossom, '98.

By unanimous choice of the city commission, Sylvester Q. Cannon yesterday was appointed city engineer to succeed David H. Blossom, resigned. Mr. Blossom leaves the city's service April 1, and Mr. Cannon will step into his position at that time.

With the appointment of Mr. Cannon it is believed that the fight over which department, the city engineer or the street department, shall have charge of inspection of public improvements will be settled on a compromise basis. It is admitted by Commissioner Richard P. Morris, who nominated Cannon and who is opposed to the transfer of the inspection powers from the street supervisor to the engineer, that the latter two officials have come to an understanding whereby they will act jointly in the matter.

—On May 1, Kenneth M. Blake entered upon new duties as sales manager for the International Motor Company of New York, resigning his former position as manager of the Locomobile Company of America. A Boston paper printed the following account of his work:

He was connected with the Locomobile Company of America for fourteen years, and in the earlier days of motoring, spent four years traveling all over Europe as a special representative of the company, introducing the steam car made by the concern at that time. Returning to America he established the San Francisco and St. Louis branches of the company, coming to Boston in 1906 to take charge of the local branch.

Mr. Blake is one of the best known men in the automobile business in this country and in Europe. During his stay in Boston he had made a host of friends. They feel that his leaving this city means a loss to the industry here of one of its most enthusiastic representatives.

Mr. Blake had under consideration for some time the position offered him in New York and he was loth to leave Boston. The offer was so attractive, however, that he was forced to heed the call of reason and accepted.

The International Motor Company manufacture the Mack, Saurer and Hewitt lines of motor trucks.

### M. MERLE WEEKS

The secretary records with deep regret the death of M. Merle Weeks. An account of his life taken from a Los Angeles paper follows:

The son of a gallant officer and himself distinguished for service both in the Philippines and in the Boxer uprising, Capt. M. Merle Weeks, U.S.A. (retired), died suddenly at 1.30 o'clock, April 9, at his home on West Thirty-first Street. His death was the direct result of a wound through the body received at Tien-tsin while serving in the Ninth Infantry, when General Chaffee commanded the allied troops.

Weeks was born at Washington, D. C., being a son of Brigadier-General Weeks, formerly quartermaster-general of the army. After being graduated from the Boston School of Technology, where he was a member of the Delta Psi Fraternity, he entered the army in 1898, and was made a second lieutenant in the Eleventh Infantry, with which he saw service in the Philippines. He was then assigned to the Ninth Infantry and went to China. He distinguished himself for gallantry on entering Peking, being one of the first of the foreigners to arrive in the Forbidden City. He was thereupon promoted to the first lieutenantcy and after the engagement at Tien-tsin he received the commission of captain.

Weeks was a man of superb physique and wonderful vitality. He stood over six feet and weighed 220 pounds. Seeming to recover from the terrible shock of the wound, and returning to America in 1903, he was transferred to various posts until his disability compelled his retirement three years ago at Fort Sam Houston.

He came to Los Angeles, accompanied by his wife and stepson, to make his home here and soon became the center of a large group of army people who admired him for his record as a soldier and his qualities as a gentleman. The richness of his Chinese trophies made his home one of the unique salons of the city.



—When you read these notes, sit right down and write a letter to the secretary so that he will have some more information for the next number of the REVIEW.

1900.

INGERSOLL BOWDITCH.

WILLIAM R. HURD, 2d.

RICHARD WASTCOAT.

PERCY R. ZIEGLER.

N. J. NEALL, *Sec.*, 12 Pearl Street, Boston, Mass.

The class of "1900" was very well represented at the Potlatch, the following men being there: Ingersoll Bowditch, Boston, Mass.; P. R. Ziegler, of P. R. Ziegler & Co., Dairy Appliances and Supplies, Boston, Mass.; Fred D. Lawley, Lawley Brothers Yacht Yards, Neponset, Mass.; C. A. Leary, with the Massachusetts Bonding Company, State Street, Boston, Mass.; Dick Wastcoat, with the Paragon Reverse Gear Co., Taunton, Mass.; R. P. Roberts with the Anaconda Mining Company, Great Falls, Montana; Jennings, with the Irving & Casson Company, Boston, Mass.; G. W. Cutting, Jr., Weston, Mass.; T. F. E. Reardon, with the General Electric Company, Lynn, Mass.; J. B. Conant, of the Conant Brothers Mirror Co., Somerville, Mass.; W. C. Dean, Navy Department, Washington, D. C.; L. C. Smith, Massachusetts Institute of Technology; E. G. Allen, with Stone & Webster, Boston, Mass.; E. F. Brigham, with New England Confectionery Co., Boston, Mass.; W. R. Hurd, 2d, with The United Shoe Machinery Co., Beverly, Mass.—The class of 1900 held an informal dinner, May 13, at the Technology Club, and E. G. Allen gave a very interesting account of the power plants near Seattle and other places with which he was connected. He showed some very instructive lantern slides and gave those of us, who had never been West, a very clear idea of the use which is being made of water powers. The following men were present:—Allen, Bowditch, Emery, Lawley, Leary, Neall, Reardon, Remington, Richardson, Walworth, Warren, Wedlock, Wentworth.

—It will probably interest the readers of the class news to hear that Kenneth Seaver has been made chief engineer and sales manager of the Harbison Walker Refractories Company, Pennsylvania, and that he has recently read two papers before the Engineers' Society of Western Pennsylvania, one May 20, on "Refractory Materials," and another June 3, on "Refractories in Modern Boiler Plants."—Harry D. Learnard, who, since leaving Tech, has been manager of the Seth Fuller Company, electrical contractors, is now with the Worcester Electrical Company.—N. D. Whitman, who was chief engineer of the Reinforced Concrete Pipe Company of Los Angeles, California, has resigned his position, and is now chief engineer of the Concrete Products Company, Chicago, Illinois.—Charles A. Leary is now with the Massachusetts Bonding Company, State Street, Boston, Mass.—J. H. Batcheller of Telluride, Colorado, has

again changed his address to Mattapoisett, Mass., P. O. Box No. 36.—Burton S. Clark has recently been appointed building inspector of Hartford, Connecticut.—Walter Scott has started a chicken farm in Salem, N. H.—R. P. Roberts, of Great Falls, Montana, is general smelter foreman in the Anaconda Mining Company.

### *Address Changes.*

—D. G. Abeel, care of Roberts Filter Manufacturing Co., Darby, Pa.—Stephen P. Brown, 411 Dorchester Street, W. Montreal, Canada.—George W. Cutting, Jr., Weston, Mass.—A. W. Geiger, 630 Sacramento Street, San Francisco, Cal.—Dean Hinman, 4800 Lake Avenue, Chicago, Ill.—G. M. Holbrook, care of Armour & Co., Kansas City, Kansas.—Herbert H. Howes, P. O. Box 1714, Boston, Mass.—Prof. Henry V. Hubbard, Westmorley Court, Cambridge, Mass.—Henry D. Jouett, 42 W. Fordham Road, New York, N. Y.—Myron P. Potter, 1863 E. 73d Street, Cleveland, Ohio.—Paul L. Price, Box 38, Bayside, N. Y.—A. G. A. Schmidt, 938 W. Lake Street, Chicago, Ill.—Charles E. Smith, 4029 McPherson Street, St. Louis, Mo.—Charles H. Stratton, 1509 Wabash Avenue, Mattoon, Ill.—G. H. Tweedy, Minos Del Toro, Rosario, Sinoloa, Mexico.—Emil F. Vogel, 58 Ketchum Place, Buffalo, N. Y.

1901.

ROBERT L. WILLIAMS, *Sec.*, 12 Lake Street, Brighton, Mass.

June 10 the class held an interesting dinner at the Copley Square Hotel before attending the Potlatch Chantant in the Mechanics Building. The following men were present: Healey, H. T. Chandler, Schlesinger, Player, Brigham, Taft, Scully, Skene, Monaghan, Eveland, Pepperell, G. W. Allen, Connolly and Williams. Class officers were nominated for the ensuing year and the executive committee increased from three to five numbers. The special duty of this committee is to wake the class up and get the men to attend the meetings in larger numbers. At the Potlatch Chantant we were joined by M. C. Brush, C. E. Martin and D. L. Ordway.—Walter J. Heinritz has resigned from the General Electric Company and is now in the construction and operating department of the United Gas Improvement Company of Philadelphia, engaged in constructing an electric generating station. February 25, Miss Bessie B. Fuller, of Clinton, Mass., announced her engagement to him.—L. S. Florsheim has recently returned to Chicago from a trip to Africa, Italy, Germany, France and England.—J. A. Gund is president of Gund, Graham Company, Freeport, Ill. He has lately been investigating irrigated lands in Idaho.—LeRoy M. Backus visited the Hawaiian Islands last winter for pleasure, also to inspect the very interesting irrigation system on the island of Mani, known as the Haiker Ditch.—A. P. Merrill is now a member of the firm Merrill & Mahon, architects, and is



practicing in Tacoma, Washington.—A. K. Isham is president and general manager of the West Coast Iron Works, Inc., Ballard Station, Seattle, Washington.—N. L. Danforth writes:

In April, 1912, I went to California to execute a contract for mechanical equipment for the Navy Department at the Mare Island Navy Yard, Vallijo, California. Our contract amounted to approximately \$105,000 and took about five months to complete. I took my family with me and had a delightful trip. On the way west we stopped at the Grand Canyon of Arizona and spent some time seeing Los Angeles and Southern California. We returned by the Northern route through Portland, Seattle, Victoria, Vancouver and through the Canadian Rockies by the Canadian Pacific. I saw L. F. Miller in San Francisco and A. K. Isham in Seattle. I think the West offers big opportunities to mining and electrical engineers, but in other lines, especially those touching construction of power plants and the manufacture of machinery, there is far greater opportunity in the Eastern states.

—March 25, V. F. Holmes returned from Copenhagen, Denmark, where he took over the business of his late father covering Scandinavian representation of the New Jersey Zinc Company.—John T. Scully was appointed this spring to the board of examiners of the building department under the new ordinance, and approved by the Civil Service commissioners. The duties of the board will be to pass on the qualifications of builders who apply for permits for building operations. Scully will serve as chairman.—January 28, J. R. Putnam became the proud father of a future Tech man.—E. F. Lawrence writes that W. G. Holford of our class has become his associate in architecture.—The secretary met P. W. Moore on the street a few days ago, who was on a short trip from Chicago; he was looking fine and was sorry he was not going to be in Boston long enough to attend our annual meeting.—A. B. McDaniel writes:

I assisted in the organization of the Tech Club of the University of Illinois last fall, we have sixteen members. I was honored by being chosen first president of the club. Among our members are Dean Goss of the College of Engineering, Prof. T. M. Mann, head of the department of architecture, and Prof. Isabel Bevier, head of the department of household science.

—News has just been received of the passing away of James H. Hunt on September 21, 1912. He was married and lived in Newburyport, Mass.

The following address changes have been received:

F. K. Baxter, 2271 Fulton St., San Francisco, Cal.—C. M. Culp, 204 Harvard Ave., No., Seattle, Wash.—A. W. Peters, 234 Genesee St., Utica, N. Y.—C. P. Rockwood, P. O. Box 472, Indianapolis, Ind.—C. F. F. Campbell, 962 Franklin Ave., Columbus, Ohio.—F. W. Coburn, W. Middlesex, Pa.—R. M. Derby, Cedarhurst, L. I., New York.—H. C. Morris, Columbia Road, Washington, D. C.—W. Scott, 11 Pleasant St., Methuen, Mass.



Class of '03

### A CREDULOUS TALE!



Class of '03

Standing:—Bradshaw, Foster, Richardson, Gleason

Sitting:—Gould, Babcock, Miss Geager, Stiles, Nutter, Ackerman, Aldrich



Class of '03

NUTTER, CLARK



Class of '03

CLARK, NUTTER

1903.

MYRON H. CLARK, *Sec.*, 43 Glen Rock Circle, Malden, Mass.  
R. H. NUTTER, *Asst. Sec.*, Lynn, Mass.

Alexander Healey is raising sheep on a ranch in Buffalo, Wyoming. — Pelton has just gone to Germany with the American Society of Mechanical Engineers. — Arthur S. Martin is with the engineering department of the United Fruit Company, Port Limon, Costa Rica. — S. G. Porter, member American Society of Civil Engineers, who has for more than six years past been chief engineer of the Arkansas Valley Sugar Beet & Irrigated Land Company at Holly, Colorado, has resigned that position to accept the position of inspection engineer on the staff of the Commissioner of Irrigation, Department of the Interior, Canada, and will be located at Calgary. — The following item from the *Cleveland Leader* of April 20, will be found of interest:

Walter R. McCornack, new first assistant school architect, who will be school architect when F. S. Barnum retires to assume the position of consulting architect, had established a reputation in his line before he came to Cleveland recently from Boston. With Guy Lowell, of Boston, McCornack has just completed designs for New York's new \$10,000,000 Court House.

McCornack had also gained a reputation as a designer of art museums before he came to Cleveland. He also has had much experience as a school building architect. He served on a school building commission in Boston and invented a new method of lighting school structures.

He is a graduate of Boston Tech.

Walter E. Calley died January 26 in Chicago following an operation for appendicitis. He was patent attorney for the Omer Fare Register Company of Dayton, Ohio. While on a train between Dayton and Chicago, he was taken ill suddenly and passed away a few hours after the operation.

#### DECENNIAL REUNION

The secretary received very interesting letters from the following men saying that they regretted not being able to join in the outing: Cross, W. P., Mears, Pelton, Bateman, Barrows, Hoxie, Healy, Rice. Hewitt Crosby, G. M. Greene, and Charles R. Bates intended to be present but telegraphed that they were unavoidably detained but wished everybody a good time. Bridges also was kept away at the last minute on account of sickness.

Jackson was elected Decennial Historian and writes as follows:

The 1903 decennial anniversary was held at Hyannis, from Saturday, June 7 to Tuesday, June 10, ending with the Potlatch in the evening at Mechanics Hall. Those not present missed the time of their lives.

Thanks to the secretary, to Sears and the committee, and to the men who furnished their automobiles for taking the men down to the cape, and to the various points of interest to and from Aber-

deen Hall at Hyannis, every desire was anticipated and fulfilled, and the outing proved a wonderful success in bringing the men into closer acquaintance than ever before, and of affording to each man his fill and choice of indoor and outdoor sports, on land and water.

A terrific game of baseball Sunday morning left in its wake lame muscles, but the salt air on the sailing and fishing excursions, and the tennis and golf and dancing limbered up the muscles of the body, and the "cheer" and singing and story-telling in front of the huge open fireplace kept the spirits nimble and jolly.

Mrs. Yeager and her two daughters at once adopted us and made us feel that we were on a large house-party and that the hotel was ours, from towers to cellar, with no ceremonies to observe. Flannel shirts, sweaters or soft collars were rigidly enforced and stiff collars were ruthlessly removed by the committee from members whose wardrobes were limited. The only set back, occurring after reaching "Liberty Hall" at Hyannis, was experienced on Sunday at the Hyannis Port Country Club links and tennis courts. These (it seems) are considered sacred precincts on the Sabbath day, and like the clocks in the village, all signs of life are strictly prohibited. A delegation from here went by auto to Wianno, where members of the class of '88 observed Sunday, by keeping open house at the "19th hole," where we were shown all kinds of "sticks" and "balls," and how to run up big scores. This hospitality was much appreciated by those whose feelings had suffered such a puritanical rebuke on the Country Club links.

The captain conducting one of the fishing trips, prepared the "landlubbers" of the party for a dull outing by saying that the spawning season would prevent a good "catch." The said "landlubbers," however, made the captain eat his words by promptly catching two fish at a time and keeping the old fellow busy cracking hermit crabs for bait. Many men not able to go down on Saturday turned up in time for the banquet Sunday night.

The jollity was general but "Robbie" was the center of activity for wit and sugar loafs, but members at the farther end of the "T"-shaped table came in for their share of giving and taking gibes and cheers. Clark and Sears had items of interest and messages from members of the class or their wives, regretting their inability to be present.

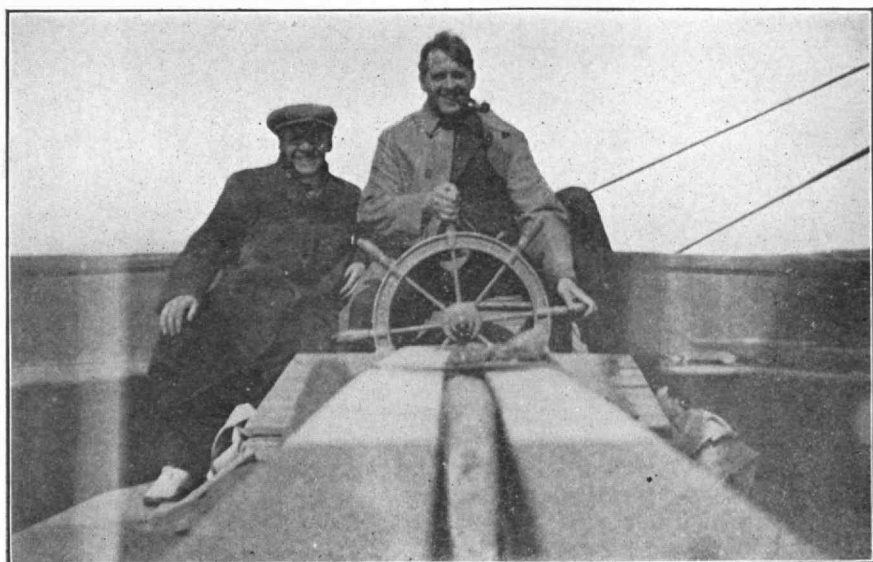
Ackerman gave an informal talk with illustrative maps showing various stages in the construction of the Cape Cod canal.

"Robbie" voiced the sentiments of the class when at the crucial question at the end of a cheer for Gleason as to "Who's all right?"—he anticipated the expected answer by substituting "Mrs. Yeager." Monday morning those coming to see the canal left in automobiles and were conducted by Ackerman to the headquarters of the commission at Sandwich,—and shown a relief model of the



Class of '03

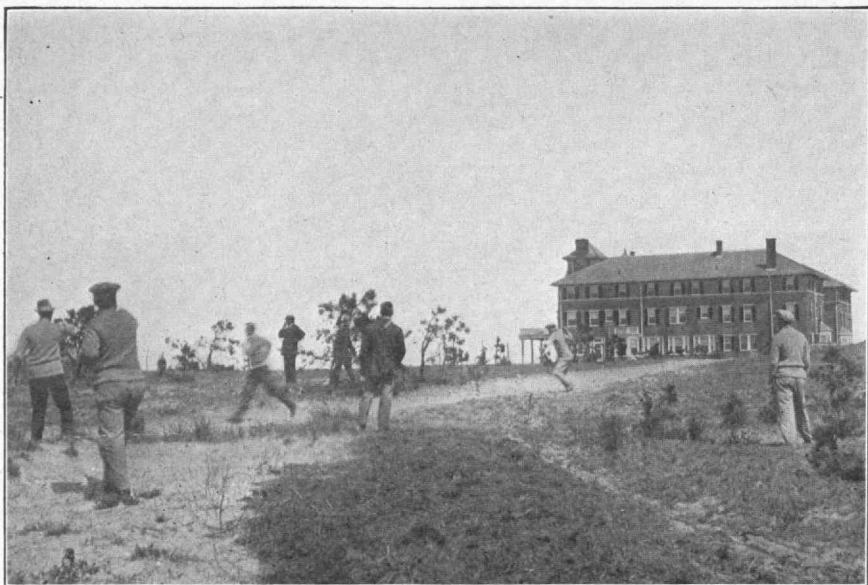
# THE CRUISE OF THE "GOOD LUCK"



Class of '03

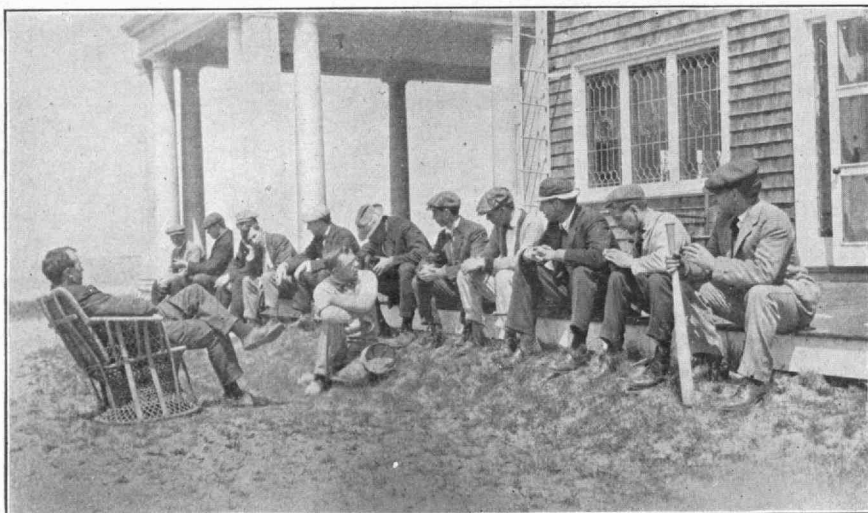
# JACKSON AND SCHOLTES NAVIGATING THE SHIP





Class of '03

A HOT BALL GAME



Class of '03

THE BUNCH



Class of '03

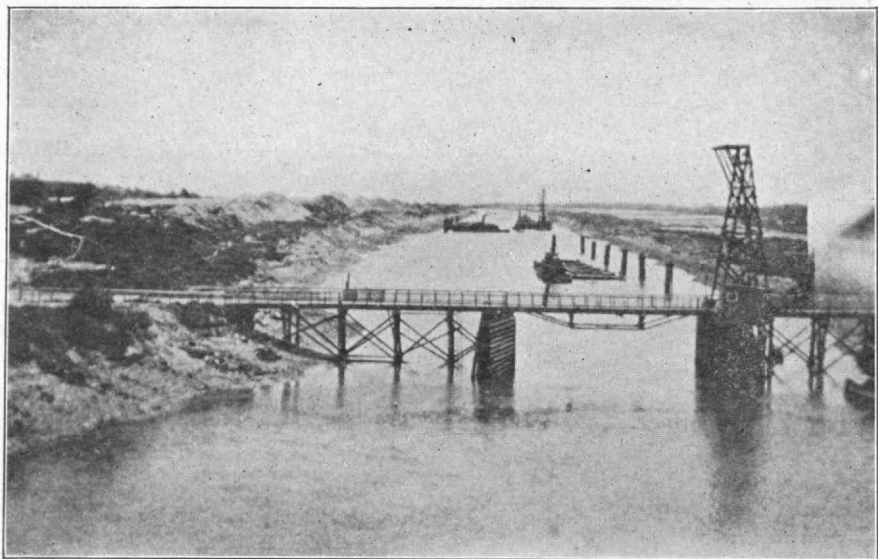
### WARMING UP



Class of '03

### THE TRIPLE BATTERY





Class of '03

LOOKING EAST ALONG THE CAPE COD CANAL FROM SAGAMORE BRIDGE



Class of '03

CAPT. PHENY AND CREW

canal—and then taken from the Eastern end to Buzzards Bay, with explanations in detail of the machinery and methods of constructing and excavating the canal and the new steel bridges which span it. Some men went swimming, others took walks in the pine woods and along the shore. The oldest windmill on the cape, overgrown with ivy, but still lazily swinging its arms in the salty breeze, and the old lighthouse not used in thirty years came in for their share of admiration and sympathy. Robbie bestowed the latter on the lighthouse with the remark, "I'd hate to be that lighthouse, not lit up for 30 years!"

As many as could do so stayed over till Tuesday, while others left by train or automobile on Monday, and two men were obliged to go home Sunday night. Every man who went down wants to go there again, and wants to go on the next outing that the class holds, no matter when it is held, and it is to be hoped that more men will turn up at the next one and make it as memorable as the decennial.—Those who took in the canal trip were: Ackerman, Aldrich, Atwood, Brown, Clark, Eaton, Gleason, Jackson, Nyhen, Sears, Scholtes, Stiles, Wing, Robertson.—'03 men at Potlatch were: Hoxie, Aldrich, Scholtes, Jackson, Calnan, Haddock, Mason, Atwood, Taylor, Yerxa, Ricker, Wing, Brown, S. P., Haskell, R., Copeland, Robertson, Eaton, Babcock, Gleason, Sears, Bartlett, Clark, M. H.—'03 men who attended outing at Hyannis, Mass., June 7 to 10 inclusive: Ackerman, Aldrich, Atwood, Brown, Calnan, Clark, Eaton, Emerson, Foster, Gleason, Gould, Green, Haddock, Howard, Jackson, Nutter, Nyhen, Sears, Scholtes, Stiles, Tuell, Richardson, Robertson, Bradshaw, Wing, Babcock, Schutle, Moseley.

1904.

EVERETT O. HILLER, *Sec.*, 117 Marlboro Street., Wollaston, Mass.  
ADDISON F. HOLMES, *Asst. Sec.*, 7 Holborn Street, Roxbury, Mass.

This issue is the last in which these notes will be written by the present secretary. At the annual meeting of the class to be held June 28 (present writing June 24) a committee will be appointed to nominate candidates and to conduct, by mail, the election of a new secretary and assistant. The choice should be carefully made as next year marks our ten-year anniversary and should be a red-letter year in the history of the class. Talk here in Boston among '04 men has already begun to center on the prospects for a real and never-to-be-forgotten celebration in June, 1914.

In behalf of the new secretary, as yet unchosen, the writer would urge all loyal members of '04 to coöperate with and encourage him in every way possible. The lot of a graduate secretary is hard chiefly because of the lethargy of the members. There are two principal types of classmen; the "dead ones" and the "live ones." If you have been in the former class get out and become a "live

one," if in the latter, continue to be more and more alive to the glory of '04 and for the sake of your own pride in being a live member of a lively class. BOOM!!! '04 ten year reunion in June 1914 or bust.—We had an interesting evening at the Potlatch, a pow-wow at Mechanics Building in place of the usual Tech night at the "Pops." Some fifteen of the faithful were present including Atkins from California and Haynes from Cleveland.—"Bill" Evans is back in Boston as New England manager for the Griscom-Russell Company, steam engineers and manufacturers. He has jumped into '04 affairs here and is one of the boosters of the harbor excursion of June 28.—We have the announcement of the marriage of E. H. Russell to Miss Ida May Eaton at West Haven, Conn., June 2. Congratulations to "Gene" and best wishes to Mrs. Russell.—The *Plain Dealer* of Cleveland, Ohio, May 5, has an interesting account of the work of Miss Marian Coffin who is a successful landscape architect, and is in business for herself. Miss Coffin's work takes her to all parts of the country "from New England to the far West" and she finds her career most fascinating.

#### *Address changes*

Albert W. Bee, Jr., 6629 Wentworth Ave., Chicago, Ill.; William A. Evans, 141 Milk St., Boston, Mass.; M. H. Goldstein, 705 Perrin Bldg., New Orleans, La.; R. Staveley Hamilton, Jr., Box 807, Lewiston, Mont.; Natt M. Johnson, Northfield, Vt.; Joseph A. Keenan, 80 W. 5th St., So. Boston, Mass.; Naval Constructor William McEntee, assistant superintending constructor, Quincy Mass.; F. K. Merriman, 703 Lawrence St., Brookland Sta., Washington, D. C.; Lester A. Russell, Russell Realty Co., 103 Commerce St., Dallas, Tex.; John R. Sanborn, 123 No. Negley Ave.; Pittsburgh, Pa.; Herbert L. Shores, 267 Howard St., Rockland, Mass.; Edgar F. Smith, 408 W. 130th St., New York, N. Y.; Naval Constructor John A. Spilman, Bureau C and R, Washington, D. C.

1905

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer Street, Boston, Mass.

The secretary has received wedding announcements as follows: Elizabeth Osgood Collier and Gilbert Sanders Tower were married at Cohasset, Mass., on June 11, 1913.—Charlotte Elizabeth Bishop and Albert Otis True were married at Rensselaer, N. Y., on June 18, 1913. Mr. and Mrs. True will be at home after September 1, at 107 Third Avenue, N. Y.—Therese Norton and Robert N. Turner were married at Arlington, Mass., on June 19, 1913.—Edward Church Smith announces the arrival of Edward Fowler Smith on April 25, 1913. Weight, eight pounds.—Theodore P. Moorehead announces the birth of a son, Robert Milner Moorehead on June 5, 1913. Moorehead writes from Vancouver,

British Columbia, 216 Duncan Building, that he has not seen any '05 men lately, but frequently sees Geist of '06, who is located in Vancouver.—Ralph Patch went to New York on the first of June to see Ilias Murr (who has been seriously ill, as noted in the last REVIEW), safely on shipboard bound for his home in Syria to recuperate. Just before sending this news to press, Patch received a card from Murr, mailed in France, saying that he made the trip across very nicely.

The annual bowling match between the classes of 1905 and 1902 was held at the Brunswick Alleys on the evening of April 23, following a dinner at Louis' Cafe. The result, as usual, was a win for '05. The score follows:

'05 vs. '02		
Team 1	Our score	Opponents
Ball	377 won	362
Whitney	388	390 won
Briggs	380	385 won
Patch		
Kenway		
(Curtis)		
(Crowell)		
Team 2		
Goodale	387 won	323
Clarke	401 won	350
Fisher	415 won	398
Guerin		
Niditch		
	2348	2208
		140
		2348
Points		
strings	4	2
pinfall	1	
	5	2

—'05 men were much in evidence and had a good time at the Potlatch which took the place of the Pops this year. The secretary had to be at the Advertising Convention in Baltimore and so missed this celebration. He had a chance, however, to watch Grafton Perkins in all his glory as the very efficient chairman of the committee on the exhibition of advertising at this convention, which was one of its most successful features.—F. Charles Starr sends in the following announcement: "Messrs. Mechlin and Starr announce that they have associated themselves with the Sanitary Engineering Company of Boston, Massachusetts, in the practice

of engineering. Wilkins Building, Washington, D. C., May, 1913."—The following cards have been received from a few of the men kind enough to keep the secretary advised of their activities. If more would do the same, we should make these class notes much more interesting.—George Fuller, 83 Adams Street, Rochester, N. Y.:

I am working on the Barge Canal and at present am in the Rochester office working on final estimate work. Some of the contracts near here are finished so there are quite a few of us computing final estimates and it is some job, for all the sections have to be factored as it is not legal to planimeter them.

You may be sure I will try to get to Boston in 1915 and I know we will have one glorious good time. Here's good luck to you and all the others of '05 and a good cheer for the New Technology, the finest in the world!

—Jack Flynn, Lines-Flynn Co., New York City:

Politeness urges me to reply to your card, but I've been working so hard at being a president that I don't know whether I am afoot or horseback. Lines and I have a "sure-nough" shop and a gang of thirty-five hungry machinists howling for more work all the time, and you can bet it takes some hustling to feed it to 'em. Haven't any news except that Lines isn't married yet, which seems strange in view of his many attractions.

—C. A. Anderson, 423 Schofield Building, Cleveland, Ohio:

Have been intending to notify you of my whereabouts for some time, but have neglected it. Came here last summer as assistant manager of the Cleveland office of the Sturtevant Company, moving my family in September. In a way things here are natural to me because "Gib" Tower and I came here together with the American Ship Company immediately after graduation. Hope to get back to Boston occasionally on business, which town after all suits me the best of any I know of. Remember me to Landers, who, I understand is back in Beantown.

—H. M. Lynde, West Raleigh, N. C.:

Since January 1, 1913 have been drainage engineer with the United States Department of Agriculture, in charge of the division office of North Carolina, address West Raleigh, N. C. Was married on June 28, 1911. Have one child, a daughter, born on June 16, 1912. Haven't met any Tech fellows down this way.

—Joseph Daniels:

Have just been elected secretary of the Technology Club of Puget Sound. Will spend the summer on a survey of the Pierce County coal area in this state for the State Geological Survey. Clapp expects to pass through here shortly on his way to British Columbia. All's well with me.

—H. M. Nabstedt, Cornelia, Ga.:

Many thanks for the card. Good thing to get after a few of us who are not very near to good old Boston and Tech.

Everything is going well with Mrs. N. and myself and the Ambursen Hyd. Const. Company is keeping us on the move from one part of the country to another right along. We expect orders to leave Georgia soon and will write you of new location. My address will remain as you have it, care of A. H. C. Co., 88 Pearl St., Boston.

If you see any of the fellows, give them my best wishes.

—Hallet R. Robbins, Copper King Mine, Chewelah, Wash.:

Have been appointed consulting engineer to the Chewelah Copper King Mining Company and will spend most of my vacation from the State College at Pullman, at the mine, and making tests on the ore, and designing a concentrating mill.

—C. R. Boggs, Boston, Mass.:

I really haven't any news that would interest the class. You know that our firm has quite a few Tech men and if each one took a little space in the REVIEW the publication would look like an ad for the Simplex. Though I did not get to the last bowling match, I shall be at the Potlatch, whatever that is, and have a good talk with you.

—Albert True, Albany, N. Y.:

I think I have the distinction of being the only '05 man located in Albany. If someone arises to challenge this claim, we will be looking for a new member for the Albany Technology Club, which brings together a good many Tech men about once in two months. S. H. Parker was here, but is now in Hudson, N. Y., in the road contracting business. I am engaged to be married to Miss Charlotte E. Bishop of Albany, N. Y.

—J. A. Furer, Naval Constructor, U. S. A., Navy Yard, Philadelphia, P.:

I am laying out the shops and purchasing the machine tools for the new Navy Yard, which is being built at Pearl Harbor near Honolulu. Toward the end of the year I expect to go to Pearl Harbor to organize the department and install the equipment.

—G. B. Jones, Chicago, Ill.:

We are having rather fair attendance at the weekly M. I. T. lunches these days. Not much activity among the '05 men, however, in other lines. Have heard from Bill Green recently from Akron, Ohio. He apparently outran the flood. Busy now getting ready for the big annual meeting to be held at Glen View Golf Club the latter part of the month. Charlie Dean came through from Denver a few weeks ago and spent a day with me. Seems to be prospering and thinks Denver is the only town.

—John W. Taylor and wife are touring Europe with the A. S. M. E. They will return in the fall to 622 June Street, Cincinnati, Ohio.—The secretary has received notice of the death of George A. Casey, February 17, 1913. The notice was unsigned and no address given, and there is no address on file through which we can address Casey's family. If anyone can give the secretary the details, he will appreciate it.

1906.

C. F. W. WETTERER, *Sec.*, 147 Milk Street, Boston, Mass.

JAMES W. KIDDER, *Asst. Sec.*, 50 Oliver Street, Boston, Mass.

The largest number of 1906 men who have turned out for some time were present at the Technology Potlatch Chantant held at Mechanics Hall on Tuesday night, June 10. Many old acquaintances were renewed and it is believed that a good foundation has been laid for more frequent and better attended class gatherings, which it is proposed to start as soon as the summer months are

over. Those who were not present please take note of the above and make every effort to get out in the fall. Following are the names of those at the 1906 tables: H. V. Coes, Robert Howe, J. W. Kidder, C. L. Kasson, Walter B. Clifford, J. E. Griffin, James Hayes, Jr., John E. L. Monaghan, Frank A. Benham, Joseph N. McKernan, Albert A. Hayward, J. L. Santry, D. P. Kelley, R. J. Lyons, E. F. Tomlinson, F. R. Batchelder, D. M. Taylor, C. S. McGinnis, H. A. Ginsburg, H. W. Brown, Andrew Kerr, and C. F. W. Wetterer. Frank H. Kennedy, M. A. C. 1906, was present as the guest of James Hayes, Jr.—Mr. and Mrs. Ralph R. Patch announce the arrival of Alma Ferguson Patch on May 10, 1913, weight 7 pounds.—A. L. Sherman, assistant engineer of the Board of Water Supply of the city of New York, who is engaged on the Catskill aqueduct work, was in Boston for a few days during the early part of June on a vacation. The *Boston Journal* of May 29 contained the following item regarding one of the 1906 men:

Herbert Whiting of Brookline, who has been officially appointed designer of lighting at the Isthmus of Panama, is a graduate electrical engineer of the Massachusetts Institute of Technology in the class of '06.

Soon after being graduated he received a position with the Holophane Company at New York. Following a letter to his employers asking for a man to design lighting for the permanent shops and repair docks at Panama, he was appointed. He is also to design the wiring system.

He left three weeks ago for Panama. The shops and docks are to be located at Balboa on the Pacific side of the isthmus.

—A letter has been received at Whiting's home expressing his pleasure regarding his surroundings.—Announcement of the marriage of Henry R. Patterson and Miss Elizabeth E. Gee was made this spring. Mrs. Patterson was a teacher in the Hamilton School at Trenton, N. J. Patterson is superintendent of the American Steel and Wire Company of the same city.

1907.

BRYANT NICHOLS, *Sec.*, 10 Grand View Road, Chelsea, Mass.  
HAROLD S. WONSON, *Asst. Sec.*, 43 Ainsworth Street, Roslindale,  
Mass.

(*Note the new address of the assistant secretary.*)

Bob Albro is back at the contracting game again, being located with F. T. Ley & Co. of Springfield, Mass., Boston, and New York. His address is 377 St. James Avenue, Springfield, Mass.—Kenneth G. Chipman with a party of a dozen scientists, headed by Vilh Jelmér Stefanssen, the explorer and discoverer of the blond Eskimos, sailed on the 10th of May for a three-years' trip to the Far North. The craft purchased for the trip was a steam whaler, the *Karbuk* of 320 tons, fitted out at Victoria, Vancouver Island. The



*Boston Globe* published the following interesting account of the trip:

The Stefanssen expedition is to be financed by the Canadian Government, and that is how Mr. Chipman happens to be attached to the party. Although he is only 26 years old he is assistant topographer of the Geological Survey of Canada and for several years has been engaged in mapping the Island of Vancouver and the Canadian Rockies.

Following his graduation in 1908, he took up mining at Sydney, N. S. Later, however, being of outdoor tastes, he entered the Dominion Government Survey. He thereafter spent most of his time on and about the Pacific Coast, coming to Ottawa in the winter to prepare his report on his field work.

Much time will be spent in a study of the direction and speed of ocean currents and of salinity. The explorers expect to send the ship back to the land of the blond Eskimos every winter and to take to the sledges in exploration work. The course will be due north from the mouth of the Mackenzie River.

On his last trip to the northland Stefanssen discovered the blond Eskimo, and he explains that one of the objects of the new expedition would be for further study of these people.

"We wonder what they are," he said, in speaking of this new race. "It cannot be that they are mixed with whalers. They may be blond from environment, or they may be related to the Greenland Eskimo."

The party will first sail to that part of Siberia off Bering Straits, where a landing and a brief trip into the interior will be made. Then the party will sail eastward along the northern coast of the American continent to Fort McPherson at the mouth of the Mackenzie River.

Here the party will divide. Stefanssen and his ship will sail north to a mysterious land of which the blond Eskimos told him. He will spend three years at least in exploration there.

Young Chipman and his party will debark at Fort McPherson and map the land to the eastward, including the home of the blond Eskimos, possibly going into Victoria Island, to the north. Mr. Chipman expects to have his work completed in two and one-half years. If this is accomplished, his party will return south overland, following the Mackenzie River across practically unknown barrens to its source, a two months' trip.

While he is gone, mail should be sent to him, care of Chipman Limited, 8-10 Bridge Street, New York City.

—On April 5, 1913, a daughter, Ruth Eloise, was born to Mr. and Mrs. Leon Arthur Dickinson, 520 West 184th Street, New York City.—On June 18, Clif Draper was married to Miss Olga Baumeister at Walla Walla, Wash. His address will be 21 Bedford Road, Schenectady, N. Y. June 18 was really quite a day in the matrimonial line for '07, for while Clif was being married in the



far west, Harold Wonson was being married at Gloucester, Mass., to Miss Ruth L. Miller of that city. Merton W. Sage, '07, was best man for Draper, while Bryant Nichols "stood up" with Wonson.—Jim Garratt is assistant engineer with the State Board of Water Commissioners of Connecticut, located at Hartford, 702 Pilgurd Building. Jim is engaged to be married to Miss Flora I. Ganong of North Cambridge, Mass., and the happy event is to take place in October.—Harry Hall has recently been promoted to be assistant chief with the Bureau of Sanitary Engineering of the Maryland State Board of Health.—"John Haskins Hartwell, son of Mr. and Mrs. Arthur E. Hartwell, '07, born July 31, 1913." So reads the notice. Congratulations!—Walter Hoover is with the Detroit Graphite Company, 94 Milk Street, Boston, Mass.—Still another addition to the class babies, Jane Jaccard, born January 8, 1913. Jane's father, of M. I. T., '07, is still residing in McGill, Nev.—During March, April, and a portion of May this year, Granville Jones was very sick with typhoid fever. He wrote the secretary on May 17, and was then practically completely recovered.—O. L. Peabody is now with the Raymond Shoe Company in Haverhill, Mass., and his address is 2 Grant Street, in that city.—John Rehn was married on February 22, 1913, to Miss Adele Niggli Heckelmann in San Antonio, Tex. John is still superintendent and chief engineer with the Cementos Hidalgo, in Hidalgo, Mex.—The engagement has been announced of Miss Margaret Rankin of Brookline to James M. Barker. Miss Rankin is a graduate of Smith College, '08.—William F. Kimball was married in June to Miss Bessie Nelson. Mr. and Mrs. Kimball motored through Maine on their honeymoon, and now have their home at 36 Liberty Avenue, West Somerville.—Oric Bates, son of Professor Arlo Bates of the Institute, and Miss Natica Inches of Boston, were married June 5. Mrs. Bates is a prominent member of the Vincent Club. Mr. and Mrs. Bates will sail for Europe where they will remain a year.—From the *Boston Transcript* of June 16:

Invitations have gone forth from Mrs. Ernest F. Fenolossa of Riverbank Court for the wedding breakfast in honor of her daughter, Brenda, who is to marry Moncure Biddle on Monday, June 30, at Inglisby, in Ipswich, Mr. and Mrs. Charles P. Searle's fine country place. Mr. Biddle was an usher at the recent wedding at Emmanuel of Oric Bates and Miss Natica Inches. Miss Fenolossa, who is a member of the Vincent Club, is a graduate of Bryn Mawr, and has taken also a course of special study at the Massachusetts Institute of Technology.

—Ed Squire is now employed by the H. W. Johns-Manville Company at 66 High Street, Boston, and his home address is 711 Chestnut Street, Waban, Mass.—Albert F. Stevenson is engaged to Miss Ruth M. Daniels of Lawrence, Mass. Albert's present address is 261 Lexington Avenue, Buffalo, N. Y.—J. E. Tresnon is now in the same office with Frank Goodnow, with the Public Service Company, Joliet, Ill.—Other than these changes, the addresses

of all the members of the class are as given in the class five-year book, or in the April REVIEW.—The *Treasure State Commercial* of May 30, Butte, Mont., has an article by Carl J. Trauerman on the present business outlook. He mentions the great purchasing power of the country which is the result of the unusual crop of 1912, surpassing all previous records, and bringing in a money value of over \$9,500,000,000. "The two great barometers of the country's prosperity, the copper and steel industries, are at present in the midst of a boom, but in spite of the fact that present conditions are good, the future seems to be in an uncertain and dazed condition and will remain so until our lawmakers and labor organizations cease their agitation, or make such sensible laws that the outlook may clear up." He also discusses the tariff and currency questions and says: "It is now generally recognized that our present currency system is too inelastic to take care of the normal business expansion of the country and to my mind this defect should be remedied before the tariff reduction is taken up. This can be remedied by wise legislation, such as the establishment of a central bank issue, or an institution to serve the same purpose." He deplores the continued agitation against Wall Street, and ends by saying that "it is difficult to see how large corporations are going to finance their immediate needs, unless they cut down their policies of improvements and expansion, which will mean general dissatisfaction among the labor body." He suggests that "our lawmakers finish their investigations and reforms as speedily as possible, that business may adjust itself to new conditions and take on a confidence which is typically American and give to this country the greatest industrial boon ever enjoyed."

1908.

RUDOLPH B. WEILER, *Sec.*, care The Sharples Separator Company, West Chester, Pa.

CHARLES W. WHITMORE, *Asst. Sec.*, 1553 Beacon Street, Brookline, Mass.

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"SOME TIME"

Nineteen Eight Class Five-Year Reunion, June 11 to 15.

Nineteen Eight! Watch our dust,  
Off to Aberdeen Hall or bust.

The above motto has become a fixture and permanent part of the class. To properly describe the good time which the fellows had on those four days and to give a small idea of their enthusiasm is utterly impossible. The pictures shown here give the reader but little chance to work even a vivid imagination to the proper pitch. One and all are crying for another time next year and at

the present writing a yearly reunion at "our" Aberdeen Hall seems assured.

Aberdeen Hall and the entire grounds comprising an estate of 1,000 acres were leased by the reunion committee as headquarters because it showed advantages far superior to any other place in this part of the country. Originally built as a club house for millionaires, it is ideal for such a time as ours. It is located on a point of land about seven miles from Hyannis, Mass., on the south side of Cape Cod. Besides being so well located it is managed by Mrs. Frances P. Yeager in such an excellent way that she now has in each fellow, who was there, a self-appointed committee to boom Aberdeen.

We had our preliminary start at the Potlatch on June 10 where we advertised the fact of our being out five years by a special stunt. This took the form of a birthday party with all the bunch dressed as five-year-olds. Alton Cook, riding a hobby horse, led the procession onto the stage, then immediately following came the toy band headed by "Lang" Coffin in blue knickerbockers and Whitmore attired in a knee-length blue dress to match. Next after the band came George Glover, chief chef, followed by four assistant chefs carrying a birthday cake about ten feet long on which were five large candles. Then came a motley array of boys and girls rolling hoops and wheelbarrows, carrying dolls, jumping-jacks and all sorts of toys. After a ring-a-round-a-rosy the cake was opened allowing balloons to escape to which were attached figure eights. This was followed with a lusty cheer and a scamper for the wings.

The real start was at 1.29 p. m. the next day, Wednesday, when the first load of fellows left the South station for Hyannis. Cary and Batchelder started about the same time in their autos with another bunch; while more followed on almost every train for the next three days. From the moment of arrival until we left on Sunday afternoon there was something doing every minute. The evening was spent in eating and getting acquainted with the arrangements, especially as to the location of the piano and—well, just beyond the billiard room. Ellis and Cook were the principal entertainers during the evening with everyone assisting.

Oh, the feed! If Aberdeen Hall doesn't become famous, the eats will.

Thursday morning breakfast, after a plunge in the briny made necessary by them that "sed git up" about six G. M., consisted of fruit, cereal, bacon and eggs, steak, lamb chops, muffins and coffee. The only reply the waitresses could get was "yes" to everything. Thus ballasted fifteen of the bunch went for a sail to Cotuit, while the remainder did stunts a'shore. At noon we had a *light* lunch, five courses, and the center of interest during the afternoon was





a ball game. After a swim came our second sample dinner and everyone said "yes" to the tune of steamed clams, soup, broiled live lobster, fried chicken, salad, roast and vegetables, ice cream, cake and pie. Suddenly, during the meal, Ellis and Cookie appeared dressed as Englishmen and after an extended impromptu dialogue, which kept the fellows in a gale of laughter, announced that it was Whit's birthday and presented him with a birthday cake covered with candles. George Glover was the principal throughout the evening's performance. It consisted of special and fancy dancing by George and everyone else, the appearance of Whit in the little girl's dress he wore at the Potlatch and the funeral of "Pop" Gerrish.

At 6 Friday morning the announcers announced and we had our beauty swim. The tennis tournament was on all day at the Hyannis Port Golf Club, while more went sailing during the morning, and during the afternoon played ball and prepared their stunts for the evening's performance. A new keg was opened at dinner but that didn't hurt our appetites a bit. A regular vaudeville show was given in the evening with Frank Towle master of ceremonies and Orin Lyon stage manager. First on the bill came Messrs. Clark, Carter and Ford, "The Humming Birds, Just Out of the Cage." L. T. Collins and "Martin" Luther came on next as "High Wire Artists, The Return of Old Favorites" followed by "The Fisherman's Return or Just Out of Jail." This was a special song number by Bob Drake and Dick Collins assisted by Bunny Ames, who finally succeeded in landing a bottle of "Bait." Messrs. Allen and Mayo, "Duologologolists, Never Exhibited Before," came on next and then Botsford, Heath and Belcher in "Hard Nox, First Appearance on Cape Cod." With lights out Cary and Whitmore alias "Those Mysterious Fellows" in "Something Dropt" showed a scientific exhibition of yegging the office safe. The final number was Ellis and Cook, "Direct from European Triumphs" giving "Aberdeen in 1613." This was an Indian scene true to life even to the shooting and cooking of a feathered whiffenpuff. All but the latest arrivals then retired to be properly serenaded by the last mentioned gentlemen.

Saturday, as usual, the human alarm clocks made it necessary for everyone to get up. Directly after breakfast, preparations for the championship baseball game began. Course I laid out the diamond near the old lighthouse and excitement never ceased. The married men made a brave up-hill fight, but the necessary reinforcements in the persons of Ed. Smith and George Freethy did not arrive until the game was over. "Chicago Bow," as an umpire, was a wonder:

## SINGLE

L. T. Collins, 1b.  
 B. W. Cary, 2b.  
 W. H. Toppam, 3b.  
 A. L. S. Ferrandi,\* s.s.  
 W. D. Ford, capt., p.  
 L. B. Ellis,\* c.  
 F. T. Towle,\* l.f.  
 W. E. Booth, c.f.  
 L. H. Allen, r.f.  
 R. C. Collins, s.s.  
 O. A. Lyon, c.  
 Roy A. Whitmore, l.f.

## MARRIED.

G. M. Belcher, p.  
 C. W. Whitmore, capt., c.  
 R. E. Drake, 1b.  
 R. J. Batchelder, 2b.  
 C. W. Clark, s.s.  
 C. D. Putnam, 3b.  
 H. E. Batsford, l.f.  
 H. T. Gerrish, r.f.  
 P. A. Esten,\* c.f.  
 E. H. Newhall, c.f.  
 E. J. Bude, l.f.

Innings	1	2	3	4	5	6	7	8	9	Total	Runs
Single	1	2	4	4	2	1	0	3	x		17
Married	0	1	0	0	0	2	5	2	4		14

Umpires, Strikes, D. Bowman; bases, A. W. Heath, Lincoln Mayo, scorer, A. M. Cook.

The afternoon was entirely taken up by field sports of all kinds, followed by water stunts. The winners of the various and exciting contests are given on the following pages. The official announcer of our evening performance was "Pop" Gerrish and the opening card was the "Rotterdam Quartette" in the "Dutch Dance" from "The Chemical Maid" given by Clark, Luther, Towle and Toppam. The "Belcher Management" then produced an exciting "Centipede Race" between two teams composed of Newhall, Booth, Smith, Esten, Putnam, Freethy, Batchelder, Leslie and Belcher. "Madame Fatima, Palmist," managed by the "Ellis-Cook Syndicate," next rubbed it into the poor beggars that were picked out. Ferrandi then gave the "Shortest Number on The Program" and he was followed by Bunny Ames in the "Sailors Hornpipe," which he can do, if it does take him all day to catch two fish. Dick Collins came across with an armchair song written especially for the occasion. The next event of the evening was "The Wedding."

## ALL STAR CAST

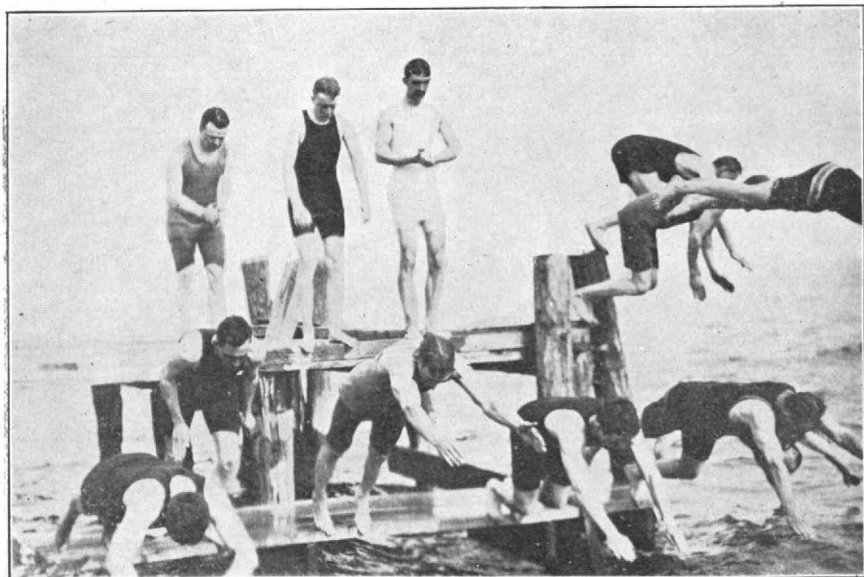
Susanna Whiffenpuff, bride.....C. W. Whitmore  
 Ashak Zobedwego, groom.....B. W. Cary  
 Amishak, best man.....Lincoln Mayo  
 Reggie Buttin.....L. B. Ellis  
 Minister.....L. H. Allen  
 Page.....A. L. S. Ferrandi

\* Put out of the game by Umpire Bowman and fined for back talk.



Class of '08

ALL THE WAY, FROM O-hee-O!



Class of '08

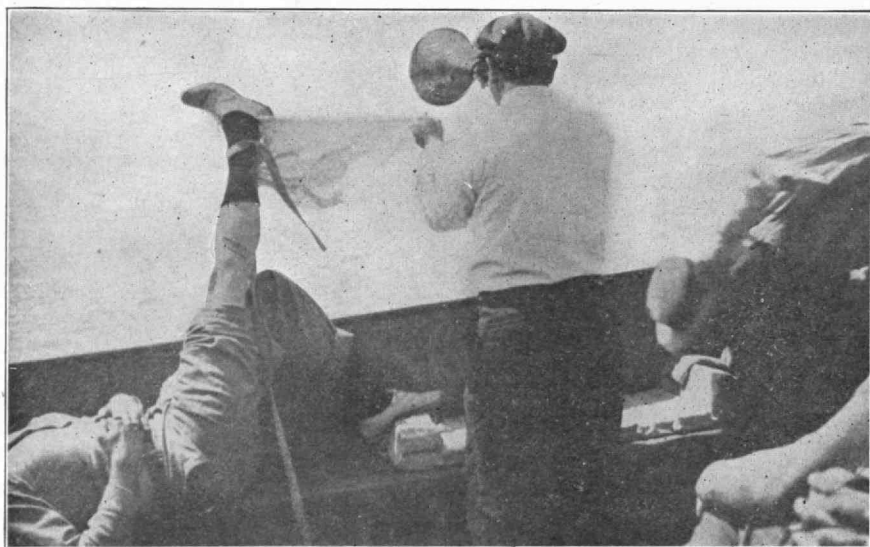
FLYING FISH!





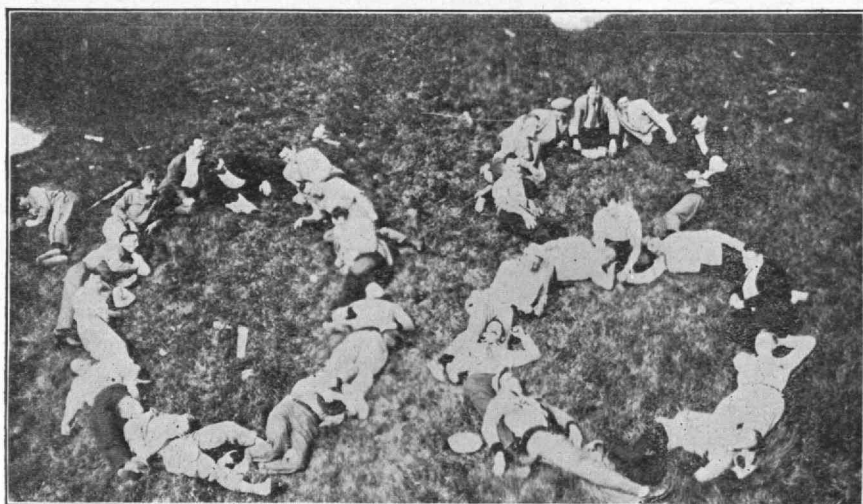
Class of '08

DID HE SINK?



Class of '08

"S. O. S."



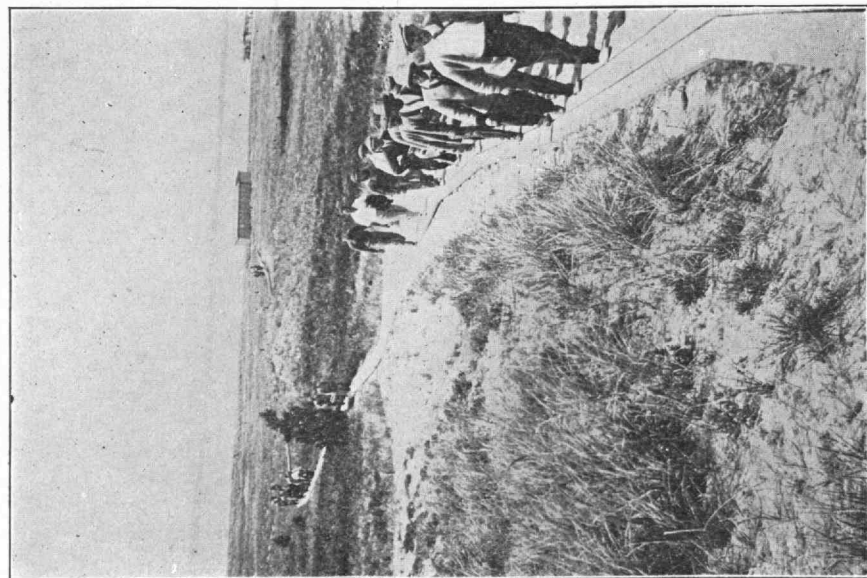
Class of '08

— US —



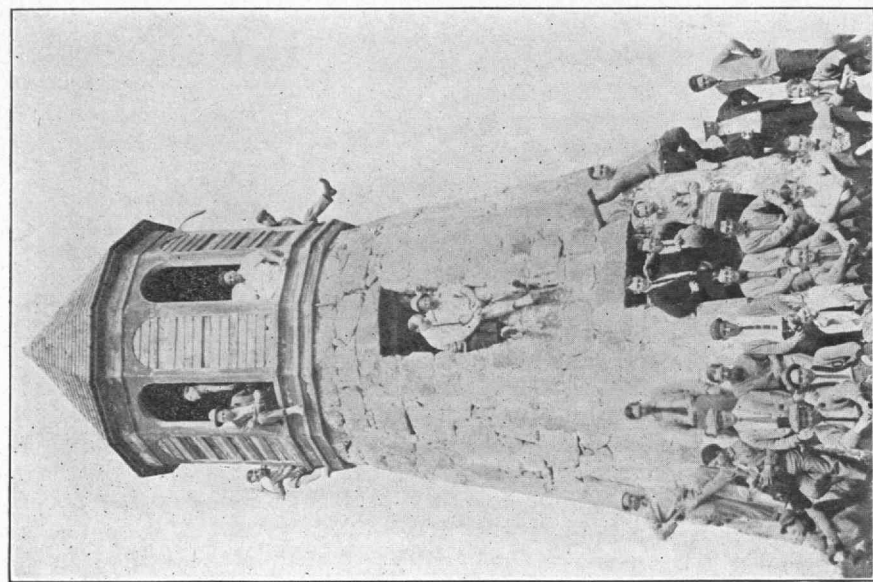
Class of '08

"WE ARE HAPPY"



Class of '08

# HEADING FOR EATS



Class of '08

# "THE BUNCH"

After many trials and tribulations the loving couple were finally married and sent away. Dim lights followed the announcement of Toppan and Ferrandi in "Sherlocko and Dr. Watso" who made some "marvelous" discoveries. Ellis, Cook and Booth gave a cockney act, "The Intruders," while the final event showed wonderful mind reading by Messrs. Carter, Ford and Beede and ended with an American History scene known as "The Spirit of '76," which was brought from the "Cave of Kegs."

## PRIZES

The show prize was given Ellis and Cook for "Aberdeen in 1613" and was presented by Allen, who then introduced "Toots" Ellis as the official to present prizes for athletic contests. With much English gusto "Toots" was a whirling success. The prizes were neat bronze Tech seal fobs with a fitting engraving on each one and they are:

Event	Winner	Time or Distance
Tennis singles	L. T. Collins,	
Tennis doubles	L. T. Collins, L. H. Allen,	
Shot Put,	H. L. Carter,	49 ft., 6¼ in.
Sprint,	W. D. Ford,	3½ sec.
Distance race,	R. C. Collins,	3 m., 4½ secs.
Potato race,	C. W. Clark,	2m., 41½ secs.
Obstacle race,	G. M. Belcher	2m., 11½ sec.,
Fat Men's race,	G. E. Freethy,	5½ secs.,
Tug O' War,	{ H. L. Carter, L. T. Collins,	
(Single men)	{ A. L. S. Ferrandi, W. D. Ford, 1 m.	
	{ B. S. Leslie,	

## WATER SPORTS

Distance race,	E. R. Smith,	1m., 1½ secs.,
Sprint,	L. Mayo,	15 secs.
Diving	L. Mayo,	
Under Water,	G. M. Belcher,	120 feet

Winners of the ball game and tug o' war were presented with badges announcing them champions, Roy S. Whitmore, brother of "Charlie," was brought down as official musician and because of his work, which helped the success of the reunion greatly, was presented with a fob. This being our last evening we wound up with a "Naught Eight" for Mrs. Yeager, a "We are Happy" and a long "M. I. T."

Sunday morning it was everyone for a sail to Herring River, during which time many mysterious stunts were pulled off, espe-

cially by Beede and Ferrandi in the cabin. We got back in time for a two o'clock dinner, our last meal at Aberdeen and sadness reigned supreme. All left in a bunch the last of the afternoon wondering where the days had gone, but with hearts full of the good time they had had.

The reunion committee feels fully repaid for the work it put in on the preparations, because one and all the fellows joined in and helped the celebration for all they were worth. Only one regret can be expressed and that is we are very sorry for those who could not come, while those that could have and didn't come, have our deepest pity. Thanks are due to every fellow that came and added his part to the good time; to Mrs. Yeager for her bountiful table and untiring efforts to assist us in every way; to Miss Yeager for her timely help; and to Roy Whitmore for his most valuable assistance both musically and otherwise.

The fellows who were fortunate enough to be there were:

R. J. Batchelder, E. J. Beede, A. W. Heath, O. S. Lyon, C. W. Whitmore, committee; L. H. Allen, M. Ames, H. E. Batsford, G. M. Belcher, W. E. Booth, D. Boman, H. L. Carter, B. W. Cary, C. W. Clark, L. T. Collins, R. C. Collins, A. M. Cook, R. E. Drake, L. B. Ellis, P. A. Esten, A. L. S. Ferrandi, R. W. Ferris, W. D. Ford, G. E. Freethy, H. T. Gerrish, G. T. Glover, S. F. Kady, B. S. Leslie, H. B. Luther, L. Mayo, E. H. Newhall, C. D. Putnam, E. R. Smith, W. H. Toppan, F. T. Towle.

### I. *On the part of the Secretaries.*

The twentieth bi-monthly dinner was held at the Boston City Club on Tuesday evening, May 13, at seven o'clock. A good dinner was served and the whole evening was thoroughly enjoyed and the fellows showed their interest in the affair by staying there all the evening instead of going out for the usual bowling match. Whitmore read a letter from Mrs. Hoole, forwarded by the secretary, telling of the death of Harry Hoole and also a clipping from a Saginaw (Mich.) newspaper, which told of the success Harry was making in life. It was voted to have the chair appoint a committee of three to draw up resolutions to be sent to Mrs. Hoole, to the class secretary and to be published in the TECHNOLOGY REVIEW. The committee appointed was as follows: H. T. Gerrish, W. D. Ford, L. B. Ellis. "Pop" Gerrish next gave a short talk on the Fund and asked the fellows to come across. A. W. Heath next told of the preparation for the five-year class reunion at Aberdeen Hall, Hyannis, Mass. He told of the boating, fishing, tennis and sports of all kind, all of which the fellows could enter into. Everything will be furnished with no extra cost. The first assessment covers everything even to smokes and refreshments. The fellow were earnestly urged to send in their application at once in order

to help out the committee. Final arrangements cannot be made until it is known how many are to be there. The assistant secretary then brought up the subject of our class giving a little show the night of Tech Pops at Mechanics Hall. A number of classes are to give entertainments and this being our five-year anniversary we should do something to advertise. A lengthy discussion followed and every fellow's opinion was asked and suggestions of all kinds were given. Every one was in favor of giving something and a committee of seven, separate from the five-year reunion committee was finally appointed as follows: "Doc" Leslie, chairman, L. B. Ellis, A. M. Cook, W. D. Ford, B. C. Cary, H. B. Luther and W. H. Toppan, committee to be known as Pops Entertainment Committee. The committee was asked to adjourn for a few minutes to organize and then report, which they did. Chairman Leslie reported that the first meeting would be held on Thursday night, May 15, at the Technology Club. Fellows outside the committee were asked to send in suggestions to a member of the Technology Club. The following were present: H. T. Gerrish, A. W. Heath, G. E. Freethy, W. H. Toppan, C. F. Joy, Jr., Lincoln Mayo, A. M. Cook, E. J. Beede, R. J. Batchelder, L. B. Ellis, W. D. Ford, H. B. Luther, O. S. Lyon and C. W. Whitmore.—The class of 1908, Jr., is increasing. Mr. and Mrs. A. C. Merrill announce the arrival of a daughter, Elizabeth, on May 10.—Edward Ross Callo-way arrived on May 19.—Mr. and Mrs. Karl R. Kennison announce the arrival of Florence Mary on March 25.—H. E. Batsford, Jr., arrived on October 20, 1912. Batsford, Sr., did not wait all this time to announce it, dear me no! The original announcement never reached the secretary.—Thurlow has an announcement to make, see his letter.—Sherwood Hall, Jr., sent in a notice of the birth of Sherwood Hall, 3d. His address is 1 Austin Street, Brookline. Mass.

The sad death of Harry Hoole was not reported in time for any comment to be made in the last number, but the editor of the REVIEW succeeded in including in that number the newspaper clipping that appeared. The committee, consisting of H. T. Gerrish, L. B. Leslie, and W. D. Ford, appointed to draw up resolutions presented the following:

WHEREAS God in his infinite wisdom has removed from our midst another of our classmates, be it

*Resolved*, That in the death of Harry William Hoole the class of 1908 of the Massachusetts Institute of Technology has lost a true friend and loyal member.

That a copy of these Resolutions be sent to his bereaved family

as a slight expression of the high esteem in which he was held by his classmates.

That a page of the records be set aside for these Resolutions.

HERBERT T. GERRISH.

LESLIE B. ELLIS,

W. D. FORD,

*Committee.*

—R. D. Hennen and G. B. Hartley have formed, January 1, 1913, the Monongahela Valley Engineering Company, engaging in general engineering work at Morgantown, W. Va.—H. W. Griswold has joined the engineering department of the Board of Water Commissioners, Pilgord Building, Hartford, Conn., leaving the U. S. Engineer Office at Tuscaloosa, Ala.—The assistant secretary is now with Lockwood, Greene & Co., of Boston. Home address is 1553 Beacon Street, Brookline, Mass.

## II. *Matrimonial*

J. M. Burch, Jr., was married to Miss Marie Rider, May 17 1913.—D. H. Maxwell was married on June 7 to Miss Virginia Senseney at Evanston, Ill. At home after July 1, 1916 Forest Avenue, Wemette, Ill.—The engagement of Miss Bertha Carnegie Coutts to Dana Wright Clark was announced in March. Miss Coutts is the daughter of W. C. Coutts of Andover, and is a Simmons College graduate of '07.

## III. *Letters.*

From L. W. Thurlow, care of Government Sugar Laboratory, Iloilo, P. I., under date of April 15, 1913:

This has the makings of a great country out here. The climate is good and natural resources abound. There is one thing that we white men have to fight and that is the stolid indifference and "tomorrow" policy which is second nature to both natives and Spaniard. I forgot to mention the "politicos" and I daresay they are doing more damage than all the rest.

You have probably heard more or less of the independence talk. It originates among a few men *insurrectos* we call them, who, if independence was granted, would assume control of affairs and the country would go to the dogs in short order.

The people are ignorant but for the most part peaceably inclined, and want nothing better than to be let alone. Under American control they have developed wonderfully and the prosperity of the country has increased tremendously. In the good old days, the natives were treated as so much swine, but today there is a vast difference. The native of today if he acts like a man is treated like a man. He wears good clothes and many of them wear shoes, a thing unheard of fifteen years ago.

The independence talk, however, has put a damper on prosperity. The custom receipts have fallen off this year at the rate of \$500,000 per month, and the situation is becoming critical. Money is very scarce and loans on real estate often go begging at 5 per cent. a month. If independence is granted I can see nothing ahead but



civil war and anarchy, followed by the absorption of this country by the Japanese, who have had their jealous eye directed this way for a long time.

I must not skip the baby. As I stated on the card, he is the wonder of the age. Some of the rest of you fellows may have beaten me on quickness and number, but for quality and size, refer them all to Thurlow, Jr. He takes the blue ribbon and the gold medal wherever he goes, and don't you forget to let the fellows know about this fact, its important.

—H. C. Faxon, engineer in charge, Bureau of Tests and Inspections, city of San Bernardino, Cal., writes under date of March 19, 1913:

California is sure a great country and I am beginning to feel quite at home here. Just at present the city is in the throes of a political upheaval which would be very amusing were it not for the fact that my job depends more or less on the outcome.

If you had been here during the past winter you would scarcely have recognized "Sunny Southern California." There were icicles on the cooling tower at the power plant of the Southern Sierras Power Company and nearly all the oranges in this part of the State were frozen. It has meant a great loss to all the growers in this region and business of all kinds is affected by it.

My work here is extremely varied consisting of making tests of every conceivable material used in construction work besides being deputy city engineer which means a lot of field work. The city council got generous and bought me a Junkers Gas Calorimeter and cement and oil testing apparatus so that I have a fairly well equipped laboratory. Being the only one in the city who has had experience in running this kind of apparatus my job is pretty secure.

—From C. F. Joy, Y. M. C. A., Newport, R. I., under date of March 15, 1913:

Am down here in the town where the "400" frolic and gambol in summer but just at present they are very scarce. In fact there are so very few here now that I feel quite out of place.

—C. W. Morrison writes under date of June 1:

This is to notify you that I have been since the first of the year connected with S. F. Bowser & Company, Fort Wayne, Ind., as a member of the engineering sales department in the Boston office. At present I am in charge of the Harrisburg, (Pa.) district in this class of work. My work is in connection with factory sales department and consists in an endeavor to get factories, power houses, street railways and other large corporations interested in bettering conditions of oil storage and distribution. This includes the efficient handling of all kinds of liquids as well as oil, the oiling of steam engines, the accurate measuring of oil flowing through pipe lines, etc.

Much to my regret I must miss the five years reunion but please convey my regards to the jolly class of '08, among the members of which there has always existed such splendid spirit of loyalty and between whom there has never to my knowledge been any serious dissension. So may it always be.

#### IV. *New Addresses.*

Robert C. Albro, 377 St. James Ave., Springfield, Mass.—J. W. Bicknell, General Rubber Co., State Settlement, Singapore.—Francis M. Bond, 107 N. Carey St., Baltimore, Md.—Ygnacio S. Bonillas, 9 Summit Ave., Brookline, Mass.—C. H. Boylston, Alabama Power Co., Birmingham, Ala.—H. Ross Callaway, 1712 Woolworth Bldg., 233 Broadway, New York.—H. Leston Carter, 219 Commonwealth Ave., Chestnut Hill, Mass.—A. O. Christensen, Groton, Mass.—R. E. Drake, 170 West Elm St., Brockton,

Mass.—R. C. Folsom, 123 Washington St., Grove Hall, Mass.—Ernest G. Genoud, 19-25 Harrison Ave., Boston, Mass.—Sydney V. James, 3259 Groveland Ave., Chicago, Ill.—Karl R. Kennison, 815 Grosvenor Bldg., Providence, R. I.—Howard B. Luther, M. I. T., Boston, Mass.—Donald H. Maxwell, 1417 Hartford Bldg., Chicago, Ill.—William D. Milne, 25 Meriam St., Lexington, Mass.—J. McGowan, Jr., Box 287, Camden, N. J.—Francis J. Murray, 106 Magnolia St., Dorchester, Mass.—A. G. Place, 517 Yale Ave., Youngstown, O.—Ralph T. Regnell, Dome Mines, So. Porcupine, Ont., Can.—Edward J. Scott, Fremont St., Reading, Mass.—C. H. Shapleigh, care of N. O. & N. E. Ry., Pass. Depot, Laurel, Miss.—Carroll D. Steele, 1228 E. 1st St., Duluth, Minn.—J. B. Stewart, Jr., care of Griffin Wheel Co., Chelsea, Mass.—Abbot H. Thompson, Dunn & McCarthy, Auburn, N. Y.—W. H. Toppan, 141 Milk St., Boston, Mass.—C. L. Wade, 319 Reed St., New Bedford, Mass.—Leland L. Wemple, Caney, Kan.—Naval Construction, George C. Westervelt, Navy Yard, Puget Sound, Wash.—Mason T. Whiting, Thompson, Saunders Co., Mont.—George D. Whittle, Room 34, City Hall, Los Angeles, Cal.

1909.

CARL W. GRAM, *Sec.*, care Walter Baker & Co., Ltd., Milton, Mass.

From Fort Myer, Va., we received the following: "Mr. Daniel N. Swan, fort Myer, Va., announces the marriage of his daughter, Nellie Frances, to Lieutenant Fred Mortimer Green, United States Army, April thirtieth, Washington, D. C."—Thornley writes from 709 East Avenue, Pawtucket, R. I.:

Please insert in the next issue of the REVIEW for the edification of the members of '09 the notice that Albert E. Thornley, Jr., M. I. T. '35, arrived in Pawtucket April 14. He is a husky little chap and weighed 8 pounds, 9 ounces, at the time of his birth.

—W. W. Clifford had a daughter, Margaret Woodbridge, born on May 1. Clifford is working at the Navy Yard with the title of structural steel draftsman and an unlimited variety of work. Home address is 52 Milton Avenue, Hyde Park, Mass.—Charles R. Main writes:

Your last letter has been on my desk for some time, and should have received an earlier reply, had I not delayed writing until I could give you a little more information about what I am doing. The first of the year, I left the Big Creek Development where I was located with the Stone & Webster Construction Company and came to Montana to take up the position of business manager of the office of Charles T. Main, engineer, which firm is engaged in the designing and engineering of two large hydro-electric developments, one at the Great Falls of the Missouri, near the city of Great Falls, and the other on the Clark Fork of the Columbia River at Thompson's Falls, Mont. At the office headquarters in Great Falls is maintained a drafting force for both jobs, there being a resident engineer and his assistants at each power site. You will doubtless be interested to know that on the 19th of February, Miss Rose R. Frost and myself were united in marriage

at the home of her parents at Santa Barbara, Cal., and that we have made our home at Great Falls, where I am located in the main office. Will you kindly note my change of address, the new address being Box 1004, Great Falls, Mont.

—Harold O. Stewart, VI was married to Miss Marguerite Dudley at Milton, Mass., on June 11. George T. Palmer, VI officiated as best man and Carl Gram was one of the ushers.—On June 15 Frank J. Lange became the father of an 8 lb. son, Frank Theodore Lange.

Among the new appointments recommended to the board of trustees of the University of Maine and passed by them at their June meeting was that of J. N. Stephenson—to be instructor in chemistry. He writes from the Rose Polytechnique Institute, Terre Haute:

We are going "back, back, back to old New England." I have been appointed instructor in industrial chemistry at the University of Maine. About half of our stuff is boxed, barrelled, crated or wrapped and will leave here the 7th. We hope to leave on the 9th of June and stop off at Niagara for our wedding trip. Three or four days will be spent there and at Buffalo visiting plants. Professor McKee has asked me to help him on some research work from June 20 to August 20. After that we shall go to Wolfeboro, N. H. for a month's vacation. On my way to Orono I expect to reach Boston on the 16th about 2.30 and take the 5 o'clock boat to Bangor. To say we are glad to get East again is not expressing our feelings at all.

There is another joyfulness; our track team won the dual meet with Illinois Normal last week, 77 to 31. They left out the high hurdles and the two mile. We would have taken at least first and second in the latter. They got one first. beat our man by six inches in the half mile. They beat us last year by nine points.

Molly Scharff gave me a delightful surprise a while ago when he telephoned that he was at the station waiting for his train to pull out. We masticated a large amount of the product of the textile industry.

—We heard through the *Boston Advertiser* of March 26 of the engagement of Franklin Towle and Miss Jennie L. Millar of Plainfield, N. J.

—From the *Times Democrat*, New Orleans, La., of June 8, we print the following interesting item:

The discovery of carbon monoxide poisoning as a cause of ghostly manifestations is the latest contribution to the result of psychic research. It became known lately that one of Boston's fine residences was haunted, and that the children and servants, who slept on the third and fourth floors, often awoke at night with sensations of great oppression and of some strange presence near; footsteps about the house were heard, and it was even rumored that apparitions were seen. Called to investigate, Franz Schneider, Jr., a biologist, of the Institute of Technology, found sufficient explanation in a very defective hot air furnace. The rooms were filled with sulphurous oxide and carbon monoxide, and the effects were those especially of carbon monoxide poisoning, the illusion of walking spirits being probably aided by outside sounds.

#### *Address Changes*

Elliot Q. Adams, 36 Emery Street, Medford, Mass.—Percival L. Adams, 170 11th St. Portland, Ore.—Thomas H. Atherton, Jr., 1000 Coal Exchange, Wilkesbarre, Pa.—Harold F. Ballard,

Millington, Mass.—C. L. Batchelder, 3425 14th St., Washington, D. C.—H. C. Bender, 418 W. 5th St., Reno, Nev.—D. K. Bullens, 333 Heed Bldg., Filbert St., Philadelphia, Pa.—John A. Christie, 646 Bergen Ave., Jersey City, N. J.—M. Stanley Clark, 329 E. 4th St., Jamestown, N. Y.—M. J. Cole, Asst. Master Mechanic of Bigelow Carpet Co., Lowell, Mass.—Albert K. Comins, Georgetown, Mass.—James H. Critchet, 247 3d St., Niagara Falls, N. Y.—Frank H. Dunnington, care of T. G. Bright & Co., Niagara Falls, Can.—Edward L. Edes, Alderpoint, Cal.—A. F. Edge, 79 Milton St., Readville, Mass.—J. J. Elbert, Fibre Finishing Co., Worcester, Mass.—Ridsdale Ellis, care of Haseltine Lalce & Co., 60 Wall St., New York, N. Y.—G. I. Emerson, 53 Johns-Wood Road, Roslindale, Mass.—G. M. Gilkison, 1000 Newhouse Bldg., Salt Lake City, Utah.—Louis S. Gordon, 50 Bloomfield St., Dorchester, Mass.—W. Duncan Green, 72 Macon St., Brooklyn, N. Y.—Victor C. Grubnau, 424 Columbia Ave., Palmerton, Pa.—Benjamin Hammond, Royal Insurance Bldg., Montreal, P. Q.—George A. Haynes, care of Estabrook Press, 184 Summer St., Boston, Mass.—Carleton W. Hubbard, Mason St., Greenwich, Conn.—Ralph E. Irwin, Pa. Dpt. of Health, Harrisburg, Pa.—Louis Jacoby, Box 1155 San Antonio, Texas.—Allen Jones, Jr., 1429 Pendleton St., Columbia, S. C.—William F. Jones, 152 W. 84th St., New York, N. Y.—Robert M. Keeney, 3519 Fifth Ave., Oakland, Pittsburgh, Pa.—Mark E. Kelley, Aberthaw Constr., Co., 8 Beacon St., Boston, Mass.—Frank J. Lange, 2 Salem St., Springfield, Mass.—Charles R. Main, Box 1004, Great Falls, Mont.—Lieut. D. P. Marvin, U. S. R. C. *Androscoggin*, Portland, Me.—Arthur K. Mitchell, Box 39, Victoria, B. C.—George A. Morrison, 1700 Kenilworth Ave., Chicago, Ill.—A. L. Moses, 6603 Kimbark Ave., Jackson Park Sta., Chicago, Ill.—Edward T. Rice, 448 W. 7th St., Erie, Pa.—Roger C. Rice, 506 U. S. Custom House, San Francisco, Cal.—Clark S. Robinson, 781 East Broadway So. Boston, Mass.—Harold Schaffer, 675 Pacific Elec. Bldg., Los Angeles, Cal.—F. Schneider, Jr., Dept. of Survey and Exhibits, Russell Sage Foundations, 31 Union Sq., New York, N. Y.—F. H. Soderstrom, Chisos Mining Co., Terlingua, Brewster Co., Texas.—A. F. Stevenson, Queen City Dairy Co., Buffalo, N. Y.—Herbert G. Stiebel, Sierra Plata Mining Co., Villa Escobedo Via Parral, Chihuahua, Mex.—A. H. Turner, 88 W. Piver St., Wilkesbarre, Pa.—Mrs. Stanley M. Udale, 10 Taft St., Detroit, Mich.—Raymond Van Eetvelde, Vernon, B. C., Can.—M. P. Whipple, 46 O'Neil St., Hudson, Mass.—Joseph H. White, Bureau of Mines, Pittsburgh, Pa.—John A. Willard, care of Bemis Bros. Bag Co., Bemis, Tenn.

1910.

JOHN M. FITZWATER, *Sec.*, Ovid, N. Y.G. BERGEN REYNOLDS, *Asst. Sec.*, 142 Highland Avenue,  
Somerville, Mass.

Very few notes have been received by the secretary in the last three months. This may be due to the extra effort on the part of the course secretaries at the last issue of return postals, which resulted in such a large number of replies for the April REVIEW. However, in the mean time the statistics of the class have been received. In all, 211 replies were received and of these 161 or 76 per cent. were from graduates and 50 were from non-graduates. Of this number 211, 139 are not married and 72 are married. That is 34 per cent. of the class are married. Of the married men 28 have 34 children which gives a rate of 1.2 children per father, 6 men have 2 children each. The class baby is Joseph Teupp Johnson, son of Reginald D. Johnson and Kathleen B. Teupp, who were married June 9, 1910. Master Johnson was born May 23, 1911, he being the first child of a graduate born after the class was graduated. The salaries of the class after it has been graduated three years are as follows:—

NO OF MEN	SALARY	GRAD.	NON-GRAD.
3	Below \$1000	2	1
3	1000 to 1099	1	2
1	1100 to 1199	0	1
12	1200 to 1299	11	1
9	1300 to 1399	7	2
3	1400 to 1499	3	0
11	1500 to 1599	10	1
4	1600 to 1699	4	0
2	1700 to 1799	1	1
5	1800 to 1899	4	1
0	1900 to 1999	0	0
4	2000 to 2499	2	2
7	2500 to 2999	4	3
2	3000	1	1
<hr/> 66		<hr/> 50	<hr/> 16

As is seen 66 men sent in the amount of their salary and of the number 50 were graduates and 16 non-graduates.

Average for graduates . . . . .	\$1,580
Average for non-graduates . . . . .	1,660
Difference . . . . .	80
Highest salary of graduate . . . . .	3,000
Lowest salary of graduate . . . . .	780
Highest salary of non-graduate . . . . .	3,000
Lowest salary of non-graduate . . . . .	750

These averages may be a little high owing to the fact that men who are now working at a low salary would hesitate to state what it is. The class held its annual dinner at the Plaza on Columbus Avenue in April, and twenty-two men were present. Truett who is with the Goodyear Rubber Company in Akron, Ohio, happened to be in town and gave a very interesting account of the flood in that region and of some of the difficulties encountered. Those present were Green, Truett, Peabody, Whitney, Armstrong, Beach, Beals, Watson, Dunlap, Downs, Rice, Riechland, Turner, Benton, Curtis, Cox, Miller, Hale, Wallower, Manson, Coughlingham, and Reynolds.—Word has just been received that Miss Helen Turner Goodwin was born May 14, 1913, daughter of Mr. and Mrs. Richard Frederic Goodwin, of Brushwood, Lexington, Virginia.—Announcement was made in June of the wedding of John M. Bierer and Miss Ruth Coulter of Bridgeport. Mrs. Bierer is a graduate of Lasell Seminary.—J. K. M. Harrison who has been since February, 1912, in charge of the investigating department of Turner, Tucker & Company, banking house, was recently appointed to the office of vice-president and treasurer. The *Boston Globe* of May 30, had the following account of the appointment:

Mr. Harrison, the treasurer, is a graduate of both Harvard and Massachusetts Institute of Technology. He is an engineer by profession and after completing his studies became an assistant to John F. Wallace, president of Westinghouse, Church, Kerr & Co., former chief engineer of the Panama Canal.

Since February, 1912, he has had charge of the investigating department of Turner, Tucker & Company. He is a member of the Harrison family of Philadelphia, prominent in banking and other interests there.

Established in 1905, the house of Turner, Tucker & Company was one of the first banking houses in the country to recognize the growing investment demand for high grade manufacturing and textile securities, and now ranks high among the houses engaged in its particular line of business.

—Henry S. Heink has undertaken the detective game according to an account taken from the *Detroit Michigan Journal*, of June 10. Heink has a fine baritone voice, and in order to get the double opportunity of cultivating that and earning a livelihood, he is now a detective in Patterson, N. J., passing the civil service examination highest on the list. After graduation Heink was for a time with Cramps Shipbuilding works, but his aspirations are all for the stage and experts say we shall some day see a representative of the class of '10, a strong factor in grand opera.

—From the *Boston Herald* of June 2:

At a tea, given at her home on Saturday, Mrs. Charles Edward Conant of Newtonville announced the engagement of her sister, Grace Verna Riley to Arthur Gorden Weinz of Dorchester. Mr. Weinz is a graduate of Dartmouth College and the Massachusetts Institute of Technology.

—Word has been received from Gorton James announcing that he is the proud father of a daughter, Sarah Beekman James, born June 14.

—The reaction retards as the temperature increases to summer heat, but a few of the old faithful had energy enough to drop that return postal in the letter box. A little effervescence from the Massachusetts brewery indicates the presence of considerable Dunlap—the atomic weight of this allotropic modification of “malt extract” is reported, as having increased five pounds. And further:

Haven't had any experiences lately except a sore toe acquired from dropping a case of “milk” on it. Things are going on in the same quite uneventful way. A brewery is such an easy going place that a fellow is liable to get mouldy. Sent in a few shekles to the Alumni Fund in hopes that it would bring '10 up to first place, but they haven't listed it yet.

—Hedden reports progress but no excitement, possibly he works?—Higbee has left the presidential preparatory school at New Haven:

Having a chance last November to go into business with the Home Insurance Company, I've been busy ever since trying to extract dollars from a cold and close-fisted world. Since April 1, I've been with the First Mortgage Guarantee Company, Long Island City, N. Y. It was not April fool's day for me when I changed.

—Trevithick is spending his vacation in Middletown, Conn., a *whole month!*—where do they raise such vacations as that? He announces the birth of a daughter, Daisy Young, in Middletown on February 10.—Waters is head of a correspondence school for young ladies, with headquarters at Camden, N. J. In his spare time he is making Campbell soup as usual for all we know.—Abbott Allen, Mumford Moulding Machinery Co., 30 Church St., Newport City.—John Avery, Jr., 45 Perkins Street, West Newton, Mass., with H. P. Converse & Company who have the contract for the new Hamburg American Line pier in South Boston. Avery writes that things are moving along at a merry clip since part of the work had to be completed to receive a steamer by May 1.—E. O. Christiansen, assistant engineer, United States Geological Survey, Hilo, Hawaii. Christiansen promises to send some news later.—M. A. Caplan, 87 Humboldt, street Roxbury, Mass:

I was married Sept. 5, 1912, to Miss Frances Ethel Aronson of Newport, R. I. After about two years with the United States Navy at Narragansett Bay, I left to take a position with the directors of the port of Boston.

—Guy N. Harcourt, 5209 Ridge Avenue, Philadelphia, Pa. For the past year on building work with F. C. Roberts & Company consulting engineers, Philadelphia, Pa., who did the 7th Street addition to the Curtis Publishing Company's buildings. Guy declares that he is neither married nor engaged.—Austin B. Henderson, 8 Lakeview Avenue, Beverly, Mass., with Boston Transit Company.—Gorton James, Room 505 A, Grand Central Terminal, New York; house at Rye, N. Y. James has opened and is taking charge of an office at the above address for I. E. Byrnes vice-president of the N. Y., N. H. & H. R. R. and Boston & Maine



R. R., etc. Before going to New York, James was with Mr. Byrnes in his Boston office.—Lasley Lee, 505 Custom House, San Francisco. Lee has been lost to us for many months but now we have the following letter from him:

For a year and a half I have been in the Water Resources Branch of the Geological Survey. The work takes me all over the state but most of the time it keeps me busy on the streams of the Sacramento and San Joaquin Valleys and the foothills of the Sierras. Some of my trips in the saddle through the National Forests are better than an outing. I expect to go east on a vacation this summer and look forward to meeting a number of 1910 men.

—John Lodge of Media, Pa., is still in Mexico wondering when the next revolution will arrive and how much a *peso* will be worth when he leaves. He expects that the work on which he is engaged will be completed soon and that he will be in United States of America early in the summer.—Carl H. Lovejoy, 53 Hamilton Avenue, New Brighton, New York. Lovejoy left the United States lighthouse service early in April to go with the Public Service Commissioners on New York subways.—George L. Mylchreest, 106 Canfield Avenue, Hartford, Conn:

Between business at the office (Ford Burch & Sheldon Incorporated) and the 10 months old boy and home I am kept pretty busy.

—H. L. Parsons, 170 Broadway, N. Y. City, in care of George W. Fuller:

Am still with George W. Fuller. Came down from Mt. Keno the first of March and was sent to Elizabeth, N. J., to investigate their system of sewers which was not working properly. Expect to leave soon on another similar investigation at Hempstead, L. I. Am living in the Y. M. C. A. here and have met several Tech men.

—Lloyd J. Pitcher, 893 Main Street, Malden, Mass. Married April 9 to Miss Mary H. Osgood of Malden, Mass.—Philip D. Ferry and John M. Fitzwater of the firm of Fitzwater & Ferry Constructing Engineers are at Ovid, N. Y., engaged in building seven miles of State highway.—R. G. Tyler, Capital Station, Austin, Texas:

I'm laying out drainage systems for the State Convict farms, area about 25,000 acres. Have to keep pretty straight or they might take me on as a state boarder.

—Robert P. Waller, Cooperstown, N. Y:

On the first of May I came up here to work for the O. & H. R. R. Company as its civil engineer. Have charge of the maintenance of way work and am as busy a flea-bitten dog. The O. & H. is an electric road that does an extensive freight business besides carrying express and mail. That is something new for me as I never saw the combination on an electric road before. It seems to work well nevertheless.

—R. S. Bicknell writes:

I left the Thermal Syndicate, Ltd., a few weeks ago and went with the above company. (Electric Furnace Company of America, office, Room 60, Chemists' Building, New York City) and find life more enjoyable than ever. I have not forsaken the chemical field, however, having several jobs of various sorts on hand.

The best of luck Bick! —J. H. O'Brien writes:

For one year after graduation I was designing and installing distilling and evaporating plants for refining glycerine. In the past two years I have been following mechanics, rather than chemical engineering. We manufacture practically the same kind of machinery as B. F. Sturtevant of Hyde Park (crushing and grinding apparatus). Am in capacity of mechanical engineer.

—R. W. Jacoby writes:

Just now we are lying low waiting to see what our friend President Wilson is going to do to the "protected industries" such as the lace curtain business. I spend the rest of my time being one half of a newly married couple.

—C. S. Redfield, favors us with his address, 10 Auburn Courts, Brookline, and says he is with Boston Rubber Shoe Company.—  
L. Rosenstein:

Since last August I have been instructor of chemistry at the University of California, and have also been working for my Ph.D. Several other Tech men are in this department.

—Walter Spaans is sorry but says he hasn't anything of interest to write, gives his address, 26 Wisconsin Avenue, Somerville, Mass.—H. E. Stump says he was reported in the last REVIEW but informs us he is still "hammering away on feed water heaters, oil separators, etc., and likes the job." Is not married nor engaged and has no prospects in matrimonial line.

1911.

ORVILLE B. DENISON, *Sec.*, Hotel Standish, Worcester, Mass.

### SPECIAL NOTICE!

Remember the class of 1911 meets for luncheon on Wednesday's at 1 o'clock at Joe May's, 104 High Street, corner of Congress, Boston, Mass. Remember!

Bubbling over with Technology spirit and living over old Institute days, twenty-two members of our illustrious class gathered in the quaint Dutch kitchen of the Copley Square Hotel in Boston on the evening of June 10 to dine and make merry. The secretary presided at the dinner, which was a decidedly impromptu affair so far as after-dinner speeches, etc., were concerned. The members of the class who attended the dinner were as follows: D. W. Southgate, A. M. Coleman, O. R. Schurig, E. C. Tolman, R. O. Wood, O. S. Clark, G. H. Estes, S. B. Dyer, E. B. Van Tassell, L. C. Cooley, Herbert Fryer, C. M. Barker, H. L. Robinson, C. L. Pepper, E. R. Hall, W. B. Hopkins, R. H. Ranger, R. E. Zimmerman, F. Osborn, 2d, C. R. Perry, E. M. Young and the secretary. During the course of the dinner songs were sung by the crowd, including two clever parodies on the famous turkey-trot "In My Harem," especially composed for the occasion by "Groucho" Fryer. The parodies follow:

*"Potlatch Special."*

In my wigwam, my wigwam,  
 There's Getty, Blackie, Machie,  
 And there never was a minute,  
 That Charlie Cross was in it;  
 Math for breakfast, Chem for dinner, 'plied for supper-time,  
 Lots of double-flunkers and they come in double time:  
 In my wigwam, my wigwam,  
 There's Van Tassel and Perry,  
 And the dance they do  
 Would make you wish that you  
 Were in the wigwam with NINETEEN 'LEVEN.

*"Retrospection."*

"In the Chapel, the Chapel,  
 There's brandy, whiskey, soda,  
 And there never was a minute,  
 When old Phys Lab was in it;  
 Booze for breakfast, Booze for dinner, Booze for supper, too,  
 Lots of fancy drinking, and it didn't cost a Sou!  
 In the Chapel, the Chapel,  
 There's where you met your class mates,  
 And the drinks they'd take,  
 Were enough to fill a lake,  
 And float the Crews of Technology.

Right here it may be well to state, that the reunion dinner was due to the untiring efforts of "Herb" Fryer, Lloyd Cooley and Ed. Hall. These three fellows, with the secretary on the committee ex-officio, perfected the plans for the affair and brought about its consummation. They are deserving of a great deal of credit. In addition to the dinner they had tentative plans prepared for a nineteen-eleven stunt at the Potlatch, in the form of an Indian village, but they learned from Chairman Glidden of the general committee that the "stunts" had to be limited to the classes out for multiples of five years only. Hence the plan had to be abandoned. Following the dinner, a general greeting was extended by the secretary, after which Cooley spoke to the fellows about having weekly luncheons in Boston. This plan was voted an excellent one by all present, and arrangements are being perfected by Cooley, Fryer and Hall, for such weekly gatherings. This is certainly a step in the right direction, and will tend to increase the class spirit in a great measure. Then each man present told what he had been doing since leaving the Institute. The dinner was enlivened by frequent Tech cheers, and finally at quarter of eight, following the singing of the Stein Song by all, the party broke up and everyone walked to Mechanics Building for the big Potlatch. If the dinner was a success from a 1911 standpoint then the Potlatch was even more so, because there must have been nearly fifty fellows back. No accurate roll of the men at the Potlatch was taken, so no list of names will be attempted by the secretary. The reunion was a huge success,

and accounts of it may be found elsewhere in the REVIEW. Suffice it to say, that 1911 was outdone by no class in numbers or in noise, save alone the graduating class, who outnumbered their two-years-older rivals, about five to one. All in all, it was *some* night!—Announcement has been received by the secretary of the marriage of Miss Miriam Bowman to Mr. Wallace Acie Van Syckel, on the evening of June 14, in St. Luke's church, Lebanon, Pennsylvania. Van is a Course III man, and has been located in Lebanon since leaving the 'stute. Good luck, Van!—L. P. Ferris, Course VI, was married February 24, to Miss Vera Hagerman Shaver in Las Cruces, New Mexico. They are making their home in New York, where Ferris is located with the American Tel. and Tel. Ferris was president of the electrical engineering society in his senior year. Best wishes, Ferris!—Phillip Stearns Avery of Tech '11 and Dartmouth '09, and Miss Mabel E. Locke of West Medford, were married May 1. Mr. and Mrs. Avery are at home at Locke Road, West Medford, Mass.—N. Sidney Marston, who has been for the past year instructor in electrical engineering in the Institute, was married early in June to Miss Marian A. Webster, South Portland, Maine.—From the *Richmond News*, Virginia, was a notice of the marriage in May of John T. Arms Jr. to Miss Dorothy Noyes. Franz Schneider, Jr., '09, acted as best man. Arms is with Carrere and Hastings, architects of New York.—“Aurora Borealis” Grossman, he of the smiling countenance, is in grave danger! He is, and in fact, *has been* located in Pittsburgh, Pennsylvania, for some time. It is feared by a number of noted specialists, that the smoky atmosphere will gradually fade “M. A.’s” rosy cheeks and sparkling eyes, and leave him a pale, never-smiling old man. Curses!! In a recent letter, he skillfully avoids any mention of the above impending crisis in his young life, but he does say:

Have been with the Pittsburgh Testing Laboratories since last August. Have seen only two other '11-ers in this benighted burg, J. A. Aaron and I. W. Wilson. There are bunches of 'stute men from other classes, though.

I note with heavy heart the ravages that time and femininity have made in our bachelor ranks. Alas, what is this world coming to! Couldn't you send a letter of warning to those who are still safe?

—“Jim” Campbell, Course I, is now located in New York City engaged in general consulting business, principally along mechanical and electrical lines, while his old “running-mate,” Harry Catching is in business for himself up in the mountains in London, Kentucky.—The secretary spent two evenings and part of a perfectly good Sunday trying to decipher and assimilate the contents of a letter from Plainfield, New Jersey, penned by “his penmanship” Ken Faunce. After all this diligent work, it was finally found that there was one sentence, which might have been written by a rational man. That was the last one in the letter, and it read:

For heaven's sake don't print this!

His wish is granted!—Ed. Vose is still with Stone & Webster and is now located in Rochester, New York, and living in the “Wilsonia.”—“Johnny” Bigelow, an architect, is now living in Malden. “Jawn” has a cute little baby, of whom he is immensely proud. And he so young!—Kester Barr is now in West Toronto, Canada, where he is manager of the Toronto branch of the Lumen Bearing Company. A splendid long letter, recently received from him, indicates that he is enjoying his work immensely and he expresses the hope that 1911 men will keep up their Tech spirit always.—“Bill” Burleigh, Course II, is again back in the Hub and has now cast his lot with the Underwriters’ laboratory. He is living at his home in Natick.—Isidore Spector is in business with his father in New York City and on March 9 was married to Miss Augusta Hunt, formerly of Boston, but now of New York City.—Hopkins, Course VI, and Southgate, Course IV, are living together in Winthrop. The former is with Stone and Webster, while the latter is in architectural business in Boston.—Osborn, Course III, was fortunate enough to be around for the reunion festivities, having just come on from Great Falls, Montana, where he was located with the Anaconda Copper Mining Company. He is starting out on a trip through the East for the company.—Babbitt, Course XI, has left the staff of the Sanitary District of Chicago, and is now with the Ohio State Board of Health in Columbus, Ohio.—Barton, Course VI, has left the New Haven Road and is now with the Connecticut River Power Company in Worcester.—George Kenney has come down from the wilds of Canada, and is now with the New Haven Road in New London.—“Charlie” Barker has recently been appointed assistant to the chief engineer at the Standard Plunger Elevator Works in Worcester. He and the secretary are still “at home” at any and all times to 1911 men, or in fact to any Tech men, so “come one, come all!”—Here endeth the first lesson! The second lesson beginneth—well, it will be address changes.

#### *Address Changes.*

Arthur K. Adams, Spencer, Massachusetts.—John A. Allan, University of Alberta, Edmonton, Alberta, Canada.—Cedric S. Anderson, P. O. Box 943, Durango, Illinois.—John T. Arms, Jr., 68 Montague Street, Brooklyn, New York.—Harold S. Arnold, North Abington, Massachusetts.—Harold E. Babbitt, Ohio State Board of Health, Columbus, Ohio.—Kester Barr, manager, Lumen Bearing Company, Weston Road, West Toronto, Canada.—Royal M. Barton, 1020 Slater Building, Worcester, Massachusetts.—John A. Bigelow, 39 Porter Street, Malden, Massachusetts.—Matthew B. Black, Avon, Lebanon County, Pennsylvania.—Edward H. Blade, 2763 Octavia Street, San Francisco, California.—Suren Bogdasarian, 37 Hopedale Street, Allston, Massa-

chusetts.—William S. Burleigh, 107 West Central Street, Natick, Massachusetts.—Paul E. Burnham, 40 Victoria Street, Lowell, Massachusetts.—J. K. Campbell, Room 1007, 366 Fifth Avenue, New York City.—John P. Constable, 8 Cottage Place, Utica, New York.—Lloyd C. Cooley, 50 Hancock Street, Stoneham, Massachusetts.—George A. Cowee, 27 Gardner Street, Allston, Massachusetts.—Allston T. Cushing, 31 Grand View Avenue, Crafton, Pennsylvania.—Ralph S. Damon, 195 Elliot Street, Milton, Massachusetts.—Louis de Florez, 21 East 32d Street, New York City.—Albert L. de Romana, 157 West Concord Street, Boston.—Joseph Desloge, care of F. V. Desloge, Desloge Lead Company, Desloge, Missouri.—Marcel Desloge, the same.—John J. Devlin, 35 Parsons Street, Brighton, Massachusetts.—Norman Duffett, 451 12th Street, Niagara Falls, New York.—Charles Edwards, Jr., 331 Park Avenue, Paterson, New Jersey.—Kenneth W. Faunce, 167 Crescent Avenue, Plainfield, New Jersey.—George B. Forristall, care of Houston Post, Houston, Texas.—Herbert Fryer, 1095 Fellsway, Malden, Massachusetts.—Joseph C. Fuller, Kearney Avenue, Perth Amboy, New Jersey.—Marcus A. Grossmann, 640 College Avenue, East Liberty Station, Pittsburgh, Pennsylvania.—Harold M. Hallett, 105 Bedford Street, Boston.—Joseph F. Harrington, 80 Plunkett street, Pittsfield, Massachusetts.—Stanford H. Hartshorn, 15 Reservoir Street, Gardner, Massachusetts.—John J. Higgins, Copper Queen Mining Company, Douglas, Arizona.—Warren B. Hopkins, 116 Grover Avenue, Winthrop, Massachusetts.—Howard P. Ireland, 131 Main Street, Binghamton, New York.—David J. Jenkins, Stockett, Montana.—Harold G. Jenks, Jewett Inn, Montpelier, Vermont.—George C. Kenney, care of New York, New Haven and Hartford Railroad, New London, Connecticut.—Thomas S. Killion, care of Standard Oil Company Chin Kiang, China.—Harry E. Lake, 1307 Commonwealth Avenue, Allston, Massachusetts.—Richard W. Lewis, The Judson, 53 Washington Square, New York City.—Nicholas F. McNeil, 10 Putnam Street, Charlestown, Massachusetts.—Lester G. Metcalf, South St. Paul, Minnesota.—Ilbrahim F. Morrison, University of Alberta, Edmonton, Alberta, Canada.—William J. Orchard, 74 South Hermitage Avenue, Trenton, New Jersey.—Franklin Osborn, 2d, 40 Holden Street, Peabody, Massachusetts.—A. L. Palmer, 6030 Waterman Avenue, St. Louis, Missouri.—William J. Pead, Jr., North Chelmsford, Massachusetts.—Oliver D. Powell, 131 Main Street, Binghamton, New York.—George W. Rapelli, 275 Rochelle Avenue, Philadelphia, Pennsylvania.—Harold L. Robinson, 17 Winthrop Street, Winchester, Massachusetts.—Hall Sargent, 2120 First Street, San Diego, California.—Lewis Schwartz, Forbes Lithograph Company, Revere, Massachusetts.—Nathaniel S. Seeley, Gatun, Canal Zone, Panama.—George A. Sinnicks, 4 Ashland Avenue, Manchester, Massachusetts.—Donald W. South-

gate, 116 Grover Avenue, Winthrop, Massachusetts.—Isidore Spector, 736 Riverside Drive, New York City.—Robert S. Thurston, Waiahua Plantation, Waiahua, Hawaii.—Edwin C. Vose, The Wilsonia, 62 Chestnut Street, Rochester, N. Y.—Harry W. Waterfall, 53 Fairbanks Street, Brighton, Massachusetts.—John Craig Watson, Superintendent of Engineering Department, Big Dome Company, South Porcupine, Canada.—Edward I. Weisberg, General Electric Company, Erie, Pennsylvania.—Russell D. Wells, 234 Newbury Street, Boston.—John L. Wilds, 31 Milk Street, Boston.—Vahan P. Yacoubyan, care of Post and McCord, 101 Park Avenue, New York City.

1912.

RANDALL CREMER, *Sec.*, Mass. Inst. of Tech.

JOHN E. WHITTLESEY, *Asst. Sec.*, 10 Regent Street, Newton, Mass.

Well a whole year has passed now since we left the Institute, and it is to be hoped that all of us are pleased with the progress we have made. No one has created a furore in the engineering world as yet, but we are hard at work, and that is even better. Congratulations 1913! May your first year out be as successful as ours has been. Incidentally it's pretty nice to have our position of infant in the Alumni Association taken by someone better fitted for it.—Behold, classmates, our new assistant secretary, Pete Whittlesey. Pete has consented to do all the work from now on, so remember to send all communications to him. Seriously speaking, the much overworked secretary is now located in New York, and so will not be able to take active part in the work of the class in Boston. Let us all try to make things easy then, for the new secretary by forwarding to him all the information we can find from now on.—We were sorry that more '12 men could not join in the celebration at the Potlatch on alumni night. About two dozen of us were there, however, and enjoyed every minute of it. It certainly brought back pleasant memories of our farewell night just a year ago when we emerged from the fiery ordeal. Let us hope that next year we can have a rousing good crowd there. Better start making your plans right now.—The following 1912 men received the degree of master of science last month:—Harry Andrews Babcock, II, Chicago, Illinois; Franklin Nelson Breed, IV, Hartford, Connecticut; Andrew Williams Carmichael, XIIIa, Boston; Gordon Irving Edgerton, IV, Cambridge; Charles Lester Gabriel, X, Flatbush, N. Y.; Walter Warren Lang, X, Roslindale; Edmund Randall Norton, XIIIa, Brookline; Jabez Harden Pratt, X, Bridgewater; Peter Nichola Shagury, I, Mehalla, Egypt; Bates Torrey, Jr., X, South Weymouth.—Quite a number of men formerly connected with our class received the degree of bachelor of



science with 1913:—Herbert Burr Alvord, II, George Wilbur Bake-  
man, XI; Volant Vashon Ballard, I; James McArthur Beale,  
XI; Lew Wyatt Beason, VI; Karl Rudolph Briel, I; Sidney Ging  
Chen, XIII; Madison Walter Christie, I; Joseph Horace Cohen,  
X; Rock Livingston Comstock, X; John Pierrepoint Constable,  
XIII; Evan Bruce Cotton, VI; William Sol Crost, VI; Wylie  
Johnston Daniels, XI; Ernest Walter Davis, VI; Thomas Chat-  
field Fisher, II; William Niles Flanders, I; Percy Le Roy Flans-  
burg, VI; Manuel Fout, XI; George Wylie Forrester, X; Paul  
James Franklin, IV; John Patrick Gallagher, I; Harold Hop-  
kinson Griffin, II; Patrick Donald Horgan, IV; Ming Tsai Hsu,  
X; Harold Stolp Johnson, VI; George Howell Jones, IV; Alfred  
Katz, XI; John Wood Brooks Ladd, I; Alberto Lavenas, II;  
George Edward Leavitt, Jr., II; Charles Lewis Levermore, X;  
Thomas James Lough, I; Joseph Warren Lovell, VI; Henry  
Douglas MacDonald, III; John Vincent Mac Donough, X; Ed-  
ward Mangan, II; Alan Hay Means, III; Fred Thurlow Morse,  
I; Alonzo Marsh Mutersbaugh, I; Albert Peter Nelson, II; Albert  
Lawrence Pashek, VI; Louis Rabinovitz, V; Philip Theobald  
Redfern, IV; Alfred Gardner Ranney, I; Rene Alphonse Richard,  
I; Charles William Rieser, X; Bradley Travis Ross, X; Everett  
St. John, II; Nimr Said Salibi, I; John Soley Selfridge, VI; Sam-  
uel Woodworth Selfridge, II; Allen Brown Staiger, II; Franklyn  
Mosher Stibbs, XI; Guy Andrew Swenson, IV; Joseph Allan  
Tennant, VI; Henry Stanley Tirrell, X; Edward Mayo Tolman,  
XI; Pao Tung Tong, I; Arthur Williams Vose, I; Richard Parker  
Wallis, I; Louis Sebastian Walsh, X; Earle Bradbury Watson, I;  
Lindsey Wood Whitehead, I; Robert Harris Woods, Jr., VI. On  
behalf of the whole class we extend hearty congratulations to them  
all.—We have had news of some weddings since the last num-  
ber: Miss Helen Esther Reeder to Russel Thomas Bailey, Course  
I, on April 29, at Dayton, Ohio; and Miss Etta May Kinnear to  
Carl Stephens Ell, Course XI, on June 10, at Boston, Massachu-  
setts. The best wishes of the class are extended to the happy  
couples.—Correspondence has not been very brisk for the last  
month or so. The fellows seem to have changed residence quite  
as much as usual, but beyond that we have not been able to gather  
a great deal of information. Here are a few good letters however,  
—the first from Dave Benbow, Reading, Pa. It's not often we  
are fortunate enough to hear from him.

It was just a year ago today that we graduated and I can imagine how the fel-  
lows of 1913 feel about this time, because if the graduation program is the same as  
last year, it is about time for the reading of theses. Since the time my degree was  
given, I guess I've visited pretty nearly every burg worth visiting east of Omaha.  
The longest trip was with our salesman and lasted seven weeks. We started the  
beginning of November and sold the wholesalers in every large town. It was just  
before the first list of the addresses of the different twelve fellows appeared in the  
REVIEW, and I had no idea whether there were any Tech men in the different towns  
or not. However, I saw Abe Gallagher at Chicago, and we later ran across Zeke

Williams and Bill Lynch. Believe me, we had a short but snappy reunion. On this same trip I met Swift Nash, '11, in St. Joseph and was mighty glad to run across him, as I hadn't seen him for several years. Arrived home in time for Xmas and then left for Boston, where I stayed several weeks and met quite a few of the old guard. After that I made several short trips to New York and Boston with our leather buyer, but didn't have much time to look up anybody. In April, I went South for two weeks on a short selling trip and in Washington met George Hobson and Schlitz French, both older Tech men. Last week I paid some short visits to different shoe factories in order to look for different methods that might be applied to our own business here, and at Auburn I met Thompson of '08. If expectations are realized I will be in Boston either the end of June, or the beginning of July, just too late for the alumni smoker, about which I am awfully sorry.

I don't know whether everybody from '12 gets the REVIEW or not, but there are always some people who manage to live without finding the good things and I guess some of our fellows are in the same fix.

It has been rather hard to keep in touch with current events at the 'Stute, but I hope to become better informed when I reach Boston. One thing I am much disappointed in and that is the class fund. However, I am hoping to see better returns next year. Most of the fellows probably spent quite a bit getting fixed at first, and a good many of them have changed positions during the year, all of which keeps the cash on hand at a very low point. But no more drool. Please give the check enclosed to Carp next time you see him for the fund. It cost me several thousand to get my degree, but I am beginning to realize that it was worth quite a bit more. So pass it along to Carp. If you see any more of the fellows, try to buttonhole them. Tell them this excuse of not having money would be all right to turn down a few tickets to a Sunday School strawberry festival, but "nothing doing" when it is the class fund. All the fellows are in pretty nearly the same fix as far as money goes, so tell them to save their excuses for their boss. He likes to hear them.

—The following comes from Erwin Schell, who is now with the American Locomotive Company, in Providence, R. I.:

My career since graduation has been far from startling or meteoric but I've been having a lot of fun just the same. At present I am in charge of the operation department of the motor car and truck branch of this company and it devolves upon me to determine the most economical and quickest methods of machining the automobile parts from the rough stock to the finished piece ready for the assembling, route the same through the shop and specify the sequence of operations. The experience gained is, of course, of value and the work affords an excellent insight into the details of modern high pressure production. The remuneration is not to be complained of, and incidentally, I am within an hour of Boston. Previous to this, Benson and I spent six months in Athol, working in the Union Twist Drill Company, at the machines and doing a bit of experimenting for them as well. The foreign expansion, which they considered, proved a fiasco and so we left, as Athol is a horrible eddy in the current of civilization.

—Can anyone imagine Dick Ayres working? I can't very well, and yet what are we to believe? He sends the following from Natchez, Mississippi:

I am working for the Government right now. Yes, I have decided to quit loafing and work for a while. I am employed as instrument man on a drainage survey. The work is rather hard but the pay is pretty good, not that we care at all about that you know. I am located in a camp right near the jumping off place. Shall be here for several months if I don't switch off to something else in the meantime. I am pretty well fed up on this camp life now.

—Poor Fox seems to be having his troubles as usual all by himself. This from New Britain:

Life is as slow as ever here, fussing one night a month, just for diversion. Went to a moving picture show a few nights ago, how's that for excitement? I hear a circus is coming pretty soon though, that is if the elephants don't get next to the coffee-pots and eat the grounds.

—Sandstein, it seems, did not get to the Pacific coast after all. He sends a short note from New York where he is located with the Electric Bond and Share Company. Cary, Runels and Martin, are also there, and all like the work very much.—C. B. Vaughan sends the following from Chicago:

A little news from the '12 bunch in this town may be of interest to you. We had quite a reunion on May 13, under the leadership of Noyes. F. C. Loweth, W. L. Lynch, D. A. Tomlinson, L. M. White, C. C. Jones, and Yours Truly had a small feed at the Boston Oyster House, that being quite the appropriate place according to Noyes. "Anything with Boston in its sounds good to me," as he puts it.

Of course Tomlinson furnished the amusement. "Oh, say, I have a fine one," and he was off. Once though, White beat him to it and got one off while Tommy was thinking of the next. This rather piqued him of course, and we were obliged to wait for some time till the next one.

After dinner we went to a perfectly respectable show.

Who would have thought that Bill Lynch would prove to be such a bright and shining light in the business world? Listen to this. He is with the P. and M. Company who supply the railroads with three quarters of their anti-rail-creepers, furnishing millions of the creepers a year. He is chief production engineer and has charge of eleven foundries, but business is so keen since he joined the company that he is on the lookout for a number of other foundries. What a hummer he must be, for since he started last June he has increased business 150 per cent. and the dividends are 60 per cent.—wheel! But why not? Here is his story of this great accomplishment: 'When I came to the company, malleable iron was selling high. I noticed a rib on the back of the creeper that looked pretty but did not appeal to my engineering eye (though of course it was needed or would not have been there) so I had it shaved off of all our patterns. There was another rise in the price of iron. 'The plates are too thick,' says I, so I shaved them down from  $\frac{3}{8}$ " to  $\frac{1}{2}$ ". Now I want to drill the castings full of holes and sell the holes to the railroads.' Do you wonder that the company is rolling in wealth?

Loweth, track expert for the C. M. and St. P., and he had quite a discussion as to the merits of the P. & M. creeper. Said L. 'A pair of creepers opposite each joint does not help much.' 'Well,' said Lynch, 'put one at every tie.' So you see with a head like that at the helm the P. & M.'s tonnage for this year should be great indeed.

We are going to have another session pretty soon.

I left the G. E. Company five weeks ago and am with the C. B. & Q. R. R., 536 West Jackson. As a starter I was given the side framing of a 70 foot steel mail and baggage car to draw to a smaller scale from the builder's blue print. This took me over a month so you know there was a little work on it.

I forgot to say that Lynch goes to Frisco soon as Pacific Coast manager.

—Emery L. Lasier and Miss Isabel Claffin of Holliston were married April 21. Mrs. Lasier is a graduate of Radcliffe and Simmons Colleges. Mr. and Mrs. Lasier will be at home in Cheat Haven, Penn.—Walter P. Green was married in June to Miss Elsa B. Eichler of Dorchester. Mr. and Mrs. Green will live in Waterbury, Conn.—The wedding announcement was received in June of George E. Robinson and Miss Gertrude B. Hughes. Mr. and Mrs. Robinson sailed on the steamship *City of Berlin*, for a three months' wedding journey through Europe.—The engagement of

Linzee S. Hooper and Miss Helen Buckingham Smith, daughter of Mr. and Mrs. Frank Hamilton Smith of Norwich is announced. Hooper is secretary to Vice-president Davison of the New London Ship & Engine company.

*Address Changes.*

J. L. Barry, 3d, 530 Ward Street, Newton Centre.—H. S. Benson, care of McElwain Company, Manchester, N. H.—D. E. Bent, Technology Chambers, Boston.—H. H. Calvin, Pacific Telegraph and Telephone Company, Santa Barbara, California.—A. M. Coleman, 173 Mt. Auburn Street, Cambridge.—J. A. Cook, Box 314, Cleveland, Ohio.—Stuart B. Copeland, Lincoln, Me.—J. M. Costner, 320 St. Nicholas Avenue, New York City.—Randall Cremer, care of Snare and Triest, 233 Broadway, New York City.—J. E. Crowley, Box 38, Lima, N. Y.—A. R. Davis, 1525 E. 82d Street, Cleveland, Ohio.—Lewis Davis, care of Parke, Davis and Company, Detroit, Michigan.—Cornelius A. Duyser, 102 Wallins Street, Winsted, Conn.—C. P. Eldred, 40 W. Newton Street, Boston.—J. H. Ellis, 520 Commonwealth Avenue, Boston.—K. W. Faunce, 167 Crescent Avenue, Plainfield, N. J.—J. B. Finberg, 108 Howland Street, Roxbury.—C. L. Gabriel, 147 Harvard Street, Brookline.—D. M. Garcia, 302 W. 22d Street, New York City.—Louis Grandgent, 600 Riverside Drive, New York City.—W. P. Green, Box 49, Waterbury, Conn.—Harold Greenleaf, Savanna, Ill.—A. V. Guillou, Westinghouse Club, Wilkinsburg, Pa.—H. H. Hanson, 12 Park View Road, Jamaica Plain.—John Hall, 6 E. Franklin Street, Baltimore, Md.—N. A. Hall, 822 DeGraw Avenue, Newark, N. J.—M. W. Hedden, Oregon City, Oregon.—C. F. Hobson, 164 Holyrood Avenue, Lowell, Mass.—H. O. Jenkins, Ramona Building, Palo Alto, Cal.—W. H. Jouett, Fort Winfield Scott, Cal.—T. F. Kalbfleisch, Jr., care of W. M. Campbell Company, Hackensack, N. J.—L. A. Matthews, 3099 Broadway, New York City.—H. E. Kebbon, care W. W. Bosworth, 527 Fifth Avenue, New York City.—Clarence McDonough, care of Foundation Company, Bank of Ottawa Building, Montreal, Canada.—E. M. Mason, care of Westinghouse Electric and Manufacturing Company, E. Pittsburg, Pa.—C. D. McCormack, Walkerton, Ontario, Canada.—B. H. Morash, 69 Union Avenue, Schenectady, N. Y.—C. E. Morrow, 166 Huntington Avenue, Boston.—J. A. Noyes, care Sullivan Machinery Company, 122 So. Michigan Avenue, Chicago, Ill.—M. C. O'Neill, 430 Harvard Street, Brookline.—H. N. Otis, Dalton, Mass.—A. L. Palmer, Jr., care of Diamond Rubber Company, Akron, Ohio.—G. L. Paullis, care of District Engineer, American Steel and Wire Company, Waukegan, Ill.—A. M. Pedersen, 39 Niles Street, Hartford, Conn.—F. A. Robinson, Jr., Pennsylvania Steel Co., Steelton, Pa.—J. B. Romer, 6020 Jefferson Avenue, Chicago, Ill.—G. A. Ryon, care Stone & Webster,

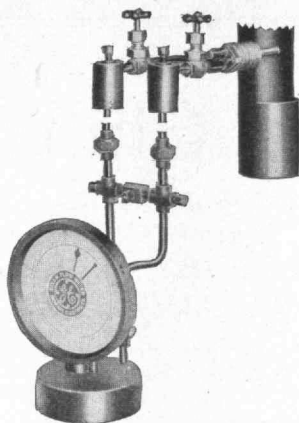
Big Creek, Cal.—J. C. Sanburn, 78 Riverview Terrace, Springfield, Mass.—E. H. Schell, 27 Park Street, Providence, R. I.—W. V. Schmiedeke, 261 Ft. Thomas Avenue, Ft. Thomas, Ky.—A. N. Smith, 15 Phillips Street, Auburndale, Mass.—C. F. Smith, 3709 Ward Street, Chicago, Ill.—H. H. Stevens, 31 Highland Avenue, Gardiner, Me.—Dugald Stewart, 176 York Street, New Haven, Conn.—F. T. Stibbs, 31 Westford Avenue, Springfield, Mass.—A. G. Thompson, Riter Conley Manufacturing Company, Leetsdale, Pa.—F. D. Welsh, 106 Hyde Park Avenue, Jamaica Plain.—R. E. Whipple, Rhode Island Tool Co., Providence, R. I.—R. M. White, Mexico D. F. Apartado 649, Mexico.—H. D. Williams, 80 Lombard Street, Winnipeg, Can.—R. E. Wilson, 11 Avon Place, Arlington, Mass.—J. S. Wise, 276 Newbury Street, Boston, Mass.—V. P. Yacoubyan, 87 Madison Avenue, New York City.

1913.

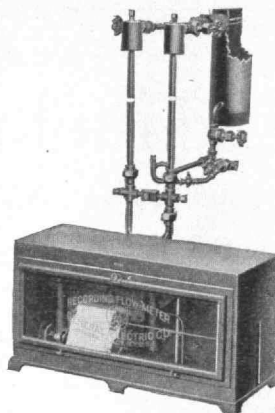
F. D. MURDOCK, *Sec.*, 31 Cameron Avenue, Cambridge, Mass.

In reply to the many questions which have been asked regarding the Alumni Association, it is hoped that the following information will be helpful. All graduates of the Institute are regular members. Any non-graduate member of a class which has been graduated may become a member on election by the executive committee. Applications for membership may be had by sending for them. The dues for membership are two dollars per year, including the TECHNOLOGY REVIEW. These dues should be sent to Walter Humphreys, secretary and treasurer. In filling out the application blanks, it will not be necessary to get endorsers. As to the class dues, all notices of dues and other literature will be sent to each member of the class when necessary. Be sure that the secretary has your correct address in his card catalogue. He will be glad to receive letters from the fellows, and will gladly give any information regarding other members in the class when it is possible. The July issue of the TECHNOLOGY REVIEW will be sent to all members of the class, but hereafter only to those who have paid their two-dollar dues to the Alumni Association.

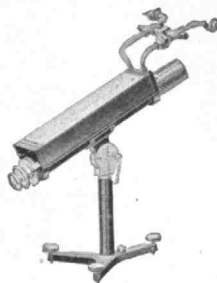
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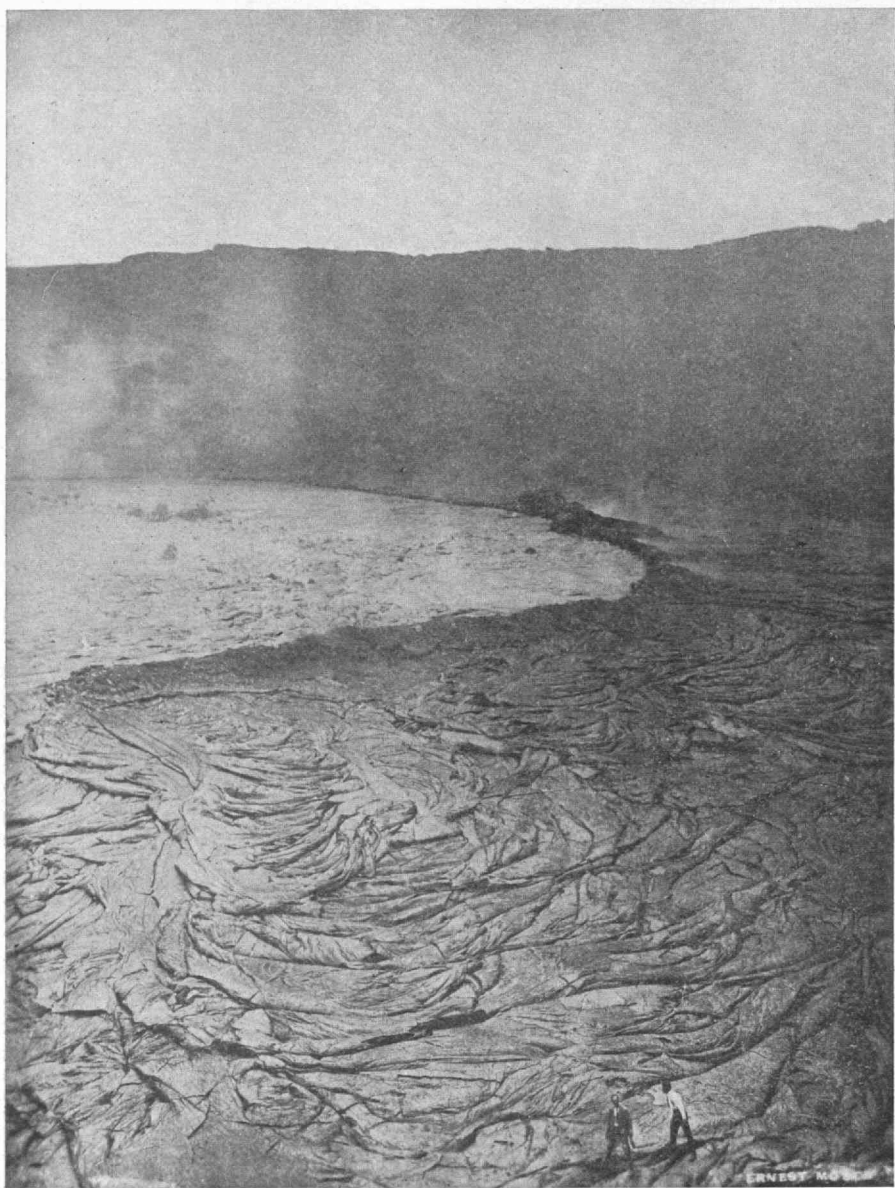
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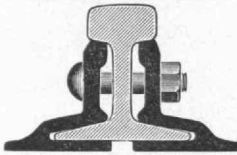
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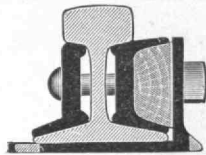
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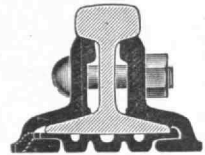
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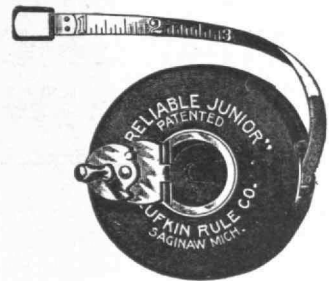
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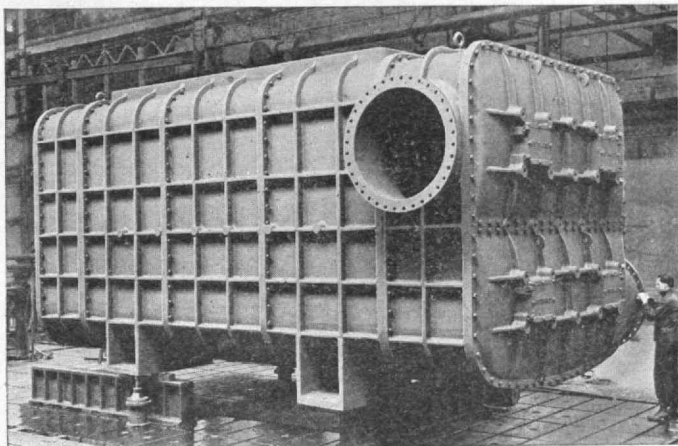
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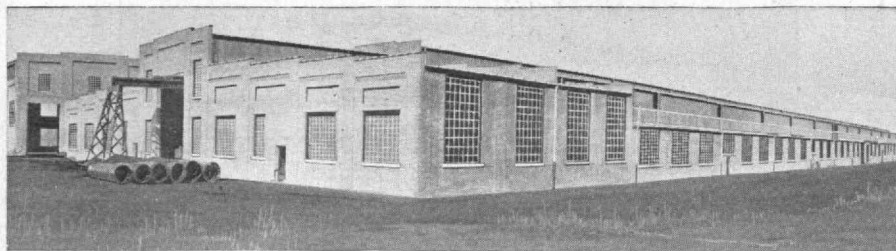
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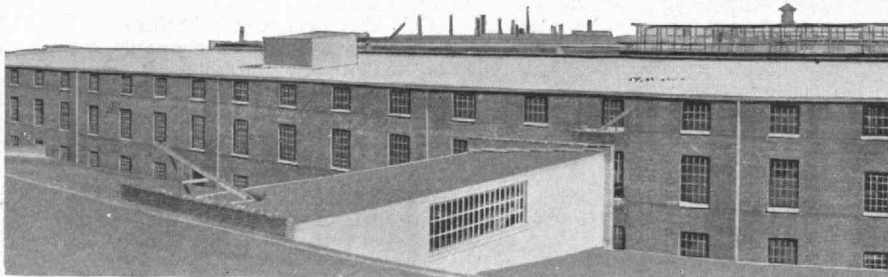
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